

AMERICAN BEE JOURNAL

Two "Long Fellows" of American Beedom



LOUIS H. SCHOLL.



MORLEY PETTIT.

(See page 522)



American Bee Journal



PUBLISHED WEEKLY BY
GEORGE W. YORK & COMPANY
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Objects of the Association.

- 1st.—To promote the interests of its members.
- 2d.—To protect and defend its members in their lawful rights.
- 3d.—To enforce laws against the adulteration of honey.

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N. E. FRANCE, Plattville, Wis.

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Contents of this Number

<i>Illustrations—</i>	
Aspinwall, L. A.	538
Dewey's Foundationer.....	532
Pettit, Morley.....	1st Page
Scholl, Louis H.....	1st Page
Stachelhausen, L.....	534
Townsend, E. D.....	540

Editorial Notes and Comments—

Book a Necessity for Beginners.....	522
Crosses vs. Pure Italian Bees.....	521
Marketing the Honey Crop.....	521
National and Local Associations.....	521

Miscellaneous News Items—

Bee-Keepers' Demonstrating Field-Meeting...	523
Gleanings Editor & Poultryman.....	523
Handling Honey Years Ago.....	522
National Association.....	523
Those Two 'Long Fellows' of Beedom.....	523

Canadian Beedom—

Beginner and Bees.....	523
Dummies and Deep Top-Bars.....	523
How to Buy Bees.....	523
Postal Vigilance.....	523
Tomfoolery About Bees.....	524

Our Sister Bee-Keepers—

Hive-Entrances in Winter and Spring.....	524
Honey and Pollen from Blackberry.....	524
Pollen-Gathering and Temperature.....	524
Queenless Colonies in Spring and Later.....	524
Wild Grape and Other Bloom.....	524

Southern Beedom—

Bee-Keeping in Uvalde Co., Tex.....	525
"Full Blood" and Other Bee-Cranks.....	525
Introducing Queens with Tobacco-Smoke.....	525
Report on Sweet Clover.....	525

Mr. Hasty's Afterthoughts—

Getting Things Down Fine.....	525
"Keep All Colonies Strong" the Watchword.....	525
Not a Hard Bee-Puzzle.....	526
Our "Prime Swarm" a "Head Swarm" in England.....	525
Poppy and Hollyhock as Bee-Attractors.....	525
Some Queen-Rearing Comments.....	525
Water as a Swarming Discourager.....	526

Contributed Articles—

Best Hives for Wintering and Extracting.....	527
Cheshire (Frank R.) and Foul Brood.....	526
Chicago-Northwestern and National.....	526
Dewey Foundationer.....	532
Mimicking Moths.....	530
Mints as Honey-Plants.....	531
Queen-Rearing—Small Nucleus System.....	531
Retention of Heat in Brood-Nest.....	530
Ruches and Ruchers in Europe.....	528
Willows and Bees.....	529

Convention Proceedings—

Control of Increase.....	533
How Many Bees Shall a Man Keep?.....	539
National at Chicago.....	533
What Have We to Hope for from the Non-Swarming Hive?.....	538

Dr. Miller's Question-Box—

Growing Catnip and Sweet Clover.....	541
Making Honey-Vinegar.....	541
Salt and Sulphur for Foul Brood.....	541
Some Questions on Management.....	541
Swarming Questions.....	541
T-Supers.....	541
When Do Bees Swarm?.....	541

Reports and Experiences

An Experience with Bees.....	542
Heavy Honey-Flow.....	542
Killed by the Frost.....	542
Peach-Bloom for Bees.....	542
Season Disastrous to Honey-Flow.....	542
Should Have a Full Honey-Flow.....	542
Working on White Clover.....	542

Langstroth on the *** Honey-Bee

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We are accumulating quite a stock of engravings that have been used in the American Bee Journal. No doubt many of them could be used again by bee-keepers in their local newspapers, on their stationery, or in other ways. Also, if we can sell some of them it would help us to pay for others that we are constantly having made and using in our columns. If there is any of our engravings that any one would like to have, just let us know and we will quote a very low price, postpaid. Address,

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Swarming Done Away With

The illustration shows one of the A. K. Ferris hives under process of manipulation. Every bee-keeper will be interested in reading about these hives arranged according to the Ferris' system for the Prevention of Swarming for Comb Honey Production.

The Non-Swarming articles by Mr. Ferris and Mr. G. M. Doolittle are proving exceedingly interesting. This great series is fully illustrated and will be continued throughout the remaining issues of 1906.

Among our other regular contributors are Mr. J. A. Green, Dr. C. C. Miller, E. W. Alexander, and many other bee-keepers of note.

No bee-keeper who will take time to look through one number of *Gleanings in Bee Culture* can satisfy himself that he does not need this "Journal of Profit."

We make it easy for you to give *Gleanings* a thorough trial; here's the offer:

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Gleanings in Bee-Culture
MEDINA, OHIO

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GERMAN BEE-BRUSH

Some months ago Mr. R. F. Holtermann called our attention to a bee-brush which he received from Germany, made of genuine bristle or horsehair. He had used one a whole season, washing it out often, and it appeared to be as good at the end of the season as at the beginning. He considered it so far ahead of anything he had ever seen or used that he wanted no other. We concluded if it was so good for him it must be equally good for others. We are now provided with a stock which we offer at 25 cents each; by mail, 30 cents. The bristles are black, and about 2 inches long, extending 8 inches on the handle. Made of white hair it would cost 5 cents more.



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GEORGE W. YORK, Editor

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An Independent Bee-Paper

THE AMERICAN BEE JOURNAL is absolutely an independent publication, and neither is it nor its editor connected in any way with any bee-supply business whatsoever. It stands entirely upon its merits as an educative force in the field of bee-keeping, and as a medium for legitimate advertisers in Apicultural or other lines. It is the oldest, and only weekly, journal of its kind in America. Its publishers believe that it deserves to be in the hands of every would-be progressive, successful bee-keeper in the land. It is in its 46th year, and to-day is acknowledged to be better in every way than at any time during its long and honorable history.



Marketing the Honey Crop

The honey crop of 1906 will soon be here, and it will need to be marketed.

Whether it will be sold in the producer's home market, or shipped away, will depend upon several things.

It is a good time now to talk about this honey-marketing question. It is a big question to many bee-keepers.

Suppose some of those who have had successful experiences in both the home and outside markets, just write out their methods for the good of others. We will be pleased to publish such articles. We can use a number of them if they are brief and to the point.

So, kindly send on what you have to say on the honey-selling subject, and we will publish it very soon—in good time to be of practical use this year.

An interchange of successful experiences in this matter can not help being a good thing for all.

If you do not wish your location published, lest some one might run in on you, what you write can be published with name and State of writer only.

Crosses vs. Pure Italian Bees

J. E. Crane, as he relates in Gleanings, had mixed blood in his hives, but found a distinct improvement upon getting a choice Italian queen and allowing her royal offspring to mate with his grade drones. He concluded that if this made so much improvement the improvement would be greater still if his bees were pure Italian. So he got a choice Italian queen from a different source, and secured young Italian queens purely mated. Mr. Crane says:

But, alas! they did not come up to my expectations, for not one of them was equal to some of those colonies whose queen had mated

with my old grade drones. To say that I was disappointed is putting it very mildly.

Facts are stubborn things to butt up against. I have but little doubt that an inferior strain of pure Italian queens crossed with black or hybrid drones would give bees less productive than pure-bred bees from some better strain; but a cross between our best strains of pure Italian queens and black or grade drones, I am satisfied, will give larger yields of honey than it is possible to secure in any other way. I wish it were otherwise, for I like the pure bees much the best, as they are so much nicer to handle, and withal so handsome that it is a constant pleasure to work them.

My present practise is, so far as I can, to breed from the best pure queen I can find, and pay no attention further. My own yards and my neighbors' furnish enough black and grade drones to give vigor to my stock.

The National and Local Associations

We have received the following letter from Leo F. Hanegan, Manager of the St. Croix Valley Honey-Producers' Association, in Wisconsin:

EDITOR AMERICAN BEE JOURNAL—

Dear Sir:—Your article on page 461, about some local and State associations dropping the National, hits us exactly; but in our case we are prepared to show that our reasons for dropping the National were other than what you evidently anticipated.

In dropping the National we did not explain why we did it, nor will we explain to them or any one without good reasons, as we do not care for friction. The fact is, that we have given the National no small number of members it probably would never have enlisted were it not for our help, and yet, on the other hand, the National is a "good thing," and deserves the support of every bee-keeper in our land.

We had arranged to make our members also members of the Wisconsin State Association, but at the last annual meeting of the State Association some resolutions were passed which barred us from continuing that membership. We regretted this, as it is largely due to the encouragement and help of Wisconsin State Inspector N. E. France, of Platteville, that we are in existence, and we have a great deal of respect and good feeling for this gentleman, not only for what he has done for our Association, but for what he has done for Wisconsin bee-keepers.

We dropped the National, but not the State—the State dropped us, and so notified us.

In the case of this Association dropping the National, it was not a case of trying to "rule or ruin," but a business proposition which was influenced by no one but the Executive Committee of this Association, every man of which has the highest opinion of the officers and manager of the National Bee-Keepers' Association.

Trusting you will square us with the fraternity, inasmuch as we are being accused through your Journal, we are,

Yours respectfully,
ST. CROIX VALLEY HONEY-PRODUCERS' ASSOCIATION,
Leo F. Hanegan, Manager.

N. B.—Inasmuch as we have over 280 members, were we to use our influence against the National, we certainly could be harmful to it; but kindly say that we are not so using our influence. We have simply stopped sending memberships to the National, for reasons we have not published to date, and probably won't make known.

L. F. H.

We may say, in the first place, that we did not know until we received Mr. Hanegan's letter that his association had dropped the National. So, of course, we could not have had him or his association in mind when writing the editorial on page 461. We made no accusation against any particular association, as it will be clearly seen that we did

American Bee Journal

not name any. The criticism contained in the editorial referred to can be applied only to such persons or associations as it may fit. If the coat does not fit, it is not necessary to put it on.

Mr. Hanegan says that the reasons for the St. Croix Valley Honey-Producers' Association dropping the National will probably not be known; also, that it was an action entirely on the part of the Executive Committee of that Association. Of course, if such action is satisfactory to all of the 280 members, it must be all right, for we believe in the membership of an association running the association, or delegating their authority. But we can not see from this just what the St. Croix Valley Honey-Producers' Association has gained in severing itself from the National. We can see this, however, that if every member of that association should join the National individually at \$1.00 each, it would cost them about \$140 more than necessary, because any local association can join the National in a body at 50 cents per member instead of \$1.00.

We are glad to know that the St. Croix Valley Honey-Producers' Association is not using its influence against the National. We do not see why any local association should try to use its influence against the National, but, rather, that such influence should be used in its favor. We thoroughly believe that every local bee-keepers' association in this country should be affiliated with the National, and that one or more delegates from such affiliated associations should be sent to the annual meetings of the National. It seems to us that hardly in any other way can the National keep in proper touch with the interests of bee-keeping throughout the whole country.

The National Bee-Keepers' Association has done some splendid work for the bee-keeping industry during the past nearly 36 years of its existence; it can still do much good work, and we believe that under its present management it means to continue to do it. So far as we know, its officers and Board of Directors enjoy the confidence and support of practically all the bee-keepers in America. Of course, there may be some exceptions, as noted in the editorial on page 461, where a few, having become dissatisfied, endeavor to injure it, but this, it seems to us, can be but for a short time, if they have any influence whatever.

We are fully aware that no local association can be compelled to join the National in a body; in fact, we do not think that any one would think of compelling such uniting. It seems to us it ought to be considered a privilege by the local association to become members of the National in a body at 50 cents per member. We believe every local association owes it to the National to affiliate with it in that manner. And while it is economy for the local association to do this, on account of the larger membership that would be gained in this way by the National, it results in larger financial resources, and also gives the National the added influence of numbers in membership, which count a great deal in many ways. The German Central Union of bee-keepers has nearly 40,000 members. America has not yet been able to get 3000 bee-keepers into one organization. We believe the last United States census shows that there are something like 700,000 bee-keepers in this country. We do not believe our National Bee-Keepers' Association can possibly ever be as large through only individual membership as it would be by local associations joining in bodies at the lower rate of membership fee.

This writer is not an officer in the National, but simply one in the ranks, and desires to see it grow in numbers and power as the years pass on. It now has the largest amount of money in its treasury in all its existence, and we believe it is in a position to do great things for all the bee-keepers of this continent. In order to do this, however, it will need the hearty support of all other organizations of bee-keepers in America.

We wish to thank Mr. Hanegan for writing, even if he was wrong in thinking that the association of which he is the able manager was referred to in the editorial in question. Possibly some good may result from what has been published so far, and, if so, it will be all right. The American Bee Journal has stood by the National organization of bee-keepers in this country longer than has any other bee-publication, and it expects to continue such support so long as it can consistently do so. Just now we believe that with the exception of a few minor points the National is in a position to do the best work of its life for the bee-keepers of this country, and it has the opportunity. The question is,

Will it embrace the opportunity, and prove itself all that it can be, not only to its membership but to the whole bee-keeping industry of this continent?

A Book a Necessity for Beginners

Beginners sometimes expect to get all the information they need through the question department of this Journal, and are not well pleased when told they ought not to utilize that department until after having made a thorough study of some good book of instruction on bee-keeping. But no sounder advice could be given for their own profit. Here is what the British Bee Journal says about it:

The first "instructions" we invariably give to beginners with bees is to procure a reliable "guide-book" on the subject. Without such help it is like groping in the dark. We are also careful to impress on beginners that it is impossible to teach the art of bee-keeping in our "Query and Reply" column. All we can do is to give advice in cases where unforeseen difficulties arise which are beyond the skill of novices; but there are many things that can not be done by rule of thumb, nor is it possible to frame instructions that will meet all cases, seeing that "bees do nothing invariably."

So there is always plenty of room for questions after the most thorough study of the book, and nothing here said is intended to discourage the sending in of such questions.



The National Convention Report is begun on page 533. We expect to continue it in smaller installments from week to week. This will insure a more careful reading, we think, as a little of it can be read weekly, while if all were given at one time perhaps none of it would be read. It will certainly be profitable to go over all of it very carefully, as there are many good things in it.

J. T. Calvert, Treasurer and Business Manager of the A. I. Root Co., dropped in to see us last week when passing through Chicago. He reported a good business in bee-supplies east of the Mississippi, and especially in the eastern part of the country. West of the Mississippi the honey season having been poor last season, and also there being a greater loss of bees in that territory, there has not been so great a demand for bee-supplies this season.

Those "Two 'Long Fellows' of Beedom," on the first page, are getting to be pretty well known in beedom, or at least among the readers of the American Bee Journal, and that includes the best part of the bee-keepers who read bee-literature. In them is splendidly represented the bee-keepers of the "North" and the "South," for Mr. Pettit (6 feet 1 inch) is the editor of "Canadian Beedom," and Mr. Scholl (6 feet 3 inches) is editor of "Southern Beedom."

They are two young "boys" that appear to be quite able to look out for themselves—and several others besides. But they may have to "stoop to conquer," should they ever decide to attempt to persuade some fair young damsels to share their "lofty" lives with them. They certainly are two of about as "high livers" as can be found amongst bee-keepers. Most of us have to "look up to them" whether we want to do so or not.

Handling Honey Years Ago.—Dr. F. D. Clum, of Cheviot, N. Y., sends us the following on the honey commission business many years ago:

When I was 16 years of age, I was clerk and book-keeper for Daniel W. Quinby, a near relative of Moses Quinby. At one time he controlled the selling price of honey in New York City. After awhile, when Mr. Quinby became advanced in years, a certain wholesale grocer went to his largest shippers and offered them a cent or two in cash above the probable price offered by D. W. Quinby, and they ruined his honey-business.

D. W. Quinby was a very honest man, of Quaker descent, and I,

American Bee Journal

as his old-time clerk, will vouch for the fact that he always returned to the shippers the full value for their honey.

It hurt the old man very much to think that his old-time patrons sold their honey for a cent or two above the market price to a wealthy wholesale grocer, for, said Mr. Quinby, "They will certainly lose in the end."

Mr. D. W. Quinby died soon afterward, and I, his clerk, studied medicine and became a physician. Since then I traveled six times around the world. I am now located on the bank of the Hudson, retired from business, and keeping bees. F. D. CLUM, M. D.

We think Dr. Clum could give something very interesting about the methods of handling honey in the olden time. It is always well to know past experiences, as then whatever progress and development there have been during the intervening years can be traced, and often valuable lessons learned.

Gleanings Editor a Poultryman.—Editor E. R. Root is combining poultry-raising with bee-keeping. In an incubator supervised by him, he says he "got 47 chicks out of a possible 130," and last accounts 6 of the 47 were still alive. No doubt it requires a very hardy strain of chickens to withstand his plan of treatment—possibly "hybrids."

The American Food Journal, published by H. B. Meyers & Co., at 334 Dearborn St., Chicago, Ills., is a 34-page monthly magazine devoted to the interests of pure food. Subscription price, \$1.00 a year; 10 cents per copy. In the May issue, Dr. E. N. Eaton, late analyst of the Illinois Food Commission, gives "Household Tests for Food Stuffs," among them being this:

JELLIES, JAMS, HONEY, PRESERVES AND SYRUPS.

Glucose may be tested for in all these products by a very simple test.

In a glass vessel as narrow as possible, place the jelly, honey, etc., and if not real thin add as much again warm water and dissolve. Then add six times the volume of strong alcohol. A white turbidity is due to dextrin and indicates commercial glucose.

Bright colored jellies, jams and preserves indicate artificial color.

The National Association.—The Board of Directors, on April 11, 1906, voted "No" on this question: "Should the National Bee-Keepers' Association assist a not-paid-up member in defending a suit in a matter arising while he was not a member?"

General Manager N. E. France, of Platteville, Wis., is now offering \$5.00 as a premium to any member of the National who will, by Aug. 1, 1906, send him the best design for a honey-label for the use of the National's membership. Here is a chance for some one to earn \$5.00, and also help a good cause. Notice that only members can compete in this. If you want to enter the race, and you are not a member, send your \$1.00 membership dues for a year to Mr. France at once.

BEES AS A NUISANCE.—Mr. France says that nearly all such complaints arise from the owner of the bees not being as friendly and generous to his neighbors as he should be. Several such cases have come up lately, and he asks bee-keepers to place their hives, and also carefully handle the bees, as not to be a cause of complaint. The Association is not expected to settle neighbors' quarrels.

A Bee-Keepers' Demonstrating Field-Meeting is to be held at Jenkintown, Pa., Tuesday, June 26, at the exhibition apiary of the A. I. Root Co. It is located in a suburb about 10 miles from the center of Philadelphia, at the home of Wm. A. Selser. This is the second annual bee-keepers' field day conducted by the Root Company at the same place. Messrs. A. I. and E. R. Root, and perhaps one or two others from the Medina office, expect to be present, and hope to meet their many bee-keeping friends. The program of the day begins at 9:30 a.m. and closes at 9 p.m. Almost every 15 minutes some special demonstration in bee-keeping takes place. Among those who are expected to "perform" are, Prof. H. A. Surface, G. M. Doolittle, W. L. Coggeshall, A. I. Root, E. W. Alexander, W. K. Morrison, N. D. West, Dr. E. F. Bigelow, Grant Stanley, Dr. E. F. Phillips, and F. D. E. Lyon. Various operations of the apiary will be shown to the wondering populace. It promises to be one of the greatest events of the kind ever known in beekeeping. Of course, everybody is invited to attend. Full particulars can be had by addressing Wm. A. Selser, 10 Vine Street, Philadelphia, Pa., who is the local representative of the A. I. Root Co.



Conducted by MORLEY PETTIT, Villa Nova, Ont.

Dummies and Deep Top-Bars

Glad to see Dr. Miller is so reasonable—he almost sees as I do (page 461). Why do I dislike a dummy? Simply because I think I get along just as well without it, and do not have to handle the extra piece, nor have the extra width of hive. Further, I do wish I could persuade Dr. Miller and others (from entirely unselfish motives) to give staple spacers a fair trial. *No other spacer I know of has so few objections and so many advantages.*

Now as to wax built between top-bars. It is one of the rules of logic, as I learned it at the University, that varying one of the conditions of the proposition and leaving all others unchanged varies the result. That one condition must have a very direct causal relation to the change in result. Dr. Miller has stated the conditions with the one change so distinctly that those who run may read the natural conclusion. Here they are:

1. Accurate spacing between top-bars, top-bars $\frac{3}{8}$ -inch deep—no wax between top-bars.
2. Accurate spacing between top-bars, top-bars $\frac{7}{8}$ -inch deep—too much wax between top-bars.

Is it not obvious that Mr. S. T. Pettit, who has contended for years that a $\frac{7}{8}$ -inch top-bar causes wax to be built between top-bars, must be right?

And now "such very true combs" are in use by the thousand in the "Marble Apiaries." But do not forget the importance of a narrow bottom-bar, only $\frac{3}{4}$ -inch wide, making a wedge-shaped comb.

How to Buy Bees

The Farming World has good advice on the above subject. It warns prospective buyers against foul brood and old drone-combs. It recommends stimulative feeding with syrup, and large hives containing 12 frames of standard size.

Postal Vigilance

Uncle Sam is very careful of the mail-matter submitted to him for transportation. A letter properly and plainly addressed was by some means sent to the wrong office, then returned to the writer. The latter forwarded the envelop to the Post-Office Department at Washington for explanations. The matter was taken up, thoroughly ferreted out, and the correspondence, consisting of about 18 letters in all, returned to the writer of the letter. This shows that even an unregistered letter going astray will be hunted up with the greatest care, and should tend to strengthen the confidence of the corresponding public in the Post-Office Department.

The Beginner and Bees

Hives in fruit-bloom should be chock-full of bees right into the corners. The beginner wants quiet bees if he can get them. He can learn their disposition pretty well by lifting their cover off quietly. If they boil out and sting him a few times they are probably cross. If they pay little or no attention, but crawl around quietly on the frames, they are all right. Then he should select a hive having straight combs, if he is buying bees on combs which have not been built from foundation. A look in the top will generally show whether the combs are built straight—each comb attached to only one frame—or whether they are built "criss-cross" or cornerwise of the hive, and each comb

American Bee Journal

attached to two or more frames, in which latter case it will be impossible to handle the bees without first transferring them.

But about the worst snag a beginner can run up against is a queenless colony. If there are many bees standing around on the alighting-board, and apparently doing nothing in particular but killing time; and if the field-bees are working indifferently and carrying in small loads of pollen, or none at all, when other colonies are working well; and if the bees in the hive are cross and irritable, it would be well for the beginner to give that hive the go-by, and select one where the bees are going in and out with such a rush that they have no time to notice him or anything else; and where any bee that shows an inclination to loaf on the front doorstep gets knocked off his feet by the "field gang;" and where the loads of pollen going in are so big that he wonders how in the world the bees manage to make them stick on, anyway. A colony like that is worth the money you pay for it.—E. G. H., in *Farmers' Advocate*.

Tomfoolery About Bees

What tomfoolery is often published in the name of science appears strikingly from the following clipped from the *Mail and Empire*:

BEES OBEY ORDERS.

In a communication to the Academy of Science, the celebrated naturalist, M. Bonnier, makes some interesting observations on the habits of bees. In the afternoon when they are collecting water from the leaves of aquatic plants, he says they will not touch honey offered to them on these leaves, or on floats of various colors. But if honey is offered to them in the morning in a similar way, it is carried off. He explains this as arising from the strictness with which they obey orders. If they are sent out for water they will not stay to gather honey.



Conducted by EMMA M. WILSON, Marengo, Ill.

Honey and Pollen from Blackberry

From the large number of bees working on blackberry blossoms it must be that much nectar is secured from them. For only a small proportion of the bees are found laden with pollen. A careless observer might easily take the pollen for that gathered from white clover, as it has much the same appearance, only lighter in color.

Queenless Colonies in Spring and Later

Early in the spring it is not worth while to coax along a queenless colony; better break it up, distributing the combs and bees where they will do most good. But later on, when queens are in the height of laying, it is not a hard thing to keep a queenless colony going, and even building up quite as rapidly as if it had a queen. No use to let a hiveful of queenless bees remain idle when they can just as well be rearing a lot of brood. The same applies to a colony with a young queen which is not yet laying.

Go to a strong colony, and draw from it 2 frames of brood, by preference those not the most mature, but the frames well filled in place of the frames taken away. Put in this strong colony 2 empty combs, and let them be placed in the center. The 2 frames of brood are, of course, to be given to the queenless colony. A week later you will find the 2 combs in the strong colony filled with eggs and young larvæ. Take them out, putting in their place 2 other empty combs, and give the eggs and brood to your queenless colony. You will see that these frames of eggs and very young brood have as yet cost the bees very little. The

greater part of the feeding is done by the queenless bees. You can keep this going just as long as there is room in the queenless colony for more brood, and it will thus be kept strong, and you will have just so many more bees than you would have had if you had given no brood to the queenless colony.

Wild Grape and Other Bloom

Wild grapes are quite plentiful in this locality, and are of considerable importance to the bees. This 25th of May the bees are very busy on them, getting both honey and pollen, the latter being of a rather light greenish yellow. Apples have gone out of bloom, a single clover bloom may be found here and there, but it will be 10 days or so before clover bloom will count for much, so the grape-bloom does an important service by helping to keep brood-rearing a-going. It's a delight to the eye, on driving along the country roads, to see red after red of the wire fences festooned with the wild grape, and when in bloom the delicate but delightfully penetrating perfume makes one think of the odors of "Araby the blest."

Pollen-Gathering and Temperature

May 28 the mercury stood 37 above zero at 6 a.m. When it got up to 47 a stray bee here and there could be seen flying at some of the hives. At 50 degrees, with a raw north wind, all colonies were astir, but none of the returning bees carried pollen. At 52 degrees (8:40 a.m.), a very few bees were bringing small loads of pollen. At 58 degrees (11 a.m.), full loads of pollen were going in, but the proportion of pollen-carriers was not up to the usual mark, and not more than half the fielders seemed at work. Half an hour later a full proportion were carrying pollen, dropping off again at noon. But that day didn't at any time become warmer than 60 degrees, and a full force of fielders were not at work till 3 days later, when the weather again became reasonable.

Hive-Entrances in Winter and Spring

In the spring our bees have an entrance only an inch square. About May 24, after some very warm days, it seemed too bad to close them up so tight, and a few were opened up, especially of the stronger colonies to which a second story had been given. Then came a cold spell when for a whole day (May 27) the mercury never got higher than 44 degrees above zero, and we were glad we hadn't opened up any more. In no case had the bees been hanging out, and it is doubtful that they needed more than the one square inch for an entrance. True, they began, in some cases where second stories had not yet been given, to build combs down below the bottom-bars in the 2-inch space, but the waste of that comb (which was of course cut away, and a second story given) was not so bad as would have been the waste of heat with a big entrance.

It is very important to have all cracks closed up tight early in the season, so as to favor brood-rearing, but what with old covers and old hives it is not always as easy as one would wish to keep all snug. It is easy, however, to keep a small entrance, and a few cracks at the top will do no harm if the entrance is small enough, the only requirement being that the entrance be large enough for the passage of the bees. A hole an inch square allows free passage for a pretty strong colony.

Some one may object that a colony needs a larger entrance than an inch square in winter, thinking that of course they need a larger entrance when it gets warmer in the spring. But in winter they're so nearly dormant that they do nothing to change the air, and in spring they'll stir up and change the air whenever it is needed.

Handy Tool-Holder.—We find we are short of the part of this Tool-Holder which has on it the cogs or ratchet by which the blade is raised or lowered when grinding. We need to have some castings made of that part. If any one of our readers who has one of these Tool-Holders will kindly write us, so we can learn who it is, we will consider it a very great favor. Address the office of the *American Bee Journal*.



Conducted by LOUIS H. SCHOLL, New Braunfels, Tex.

A Report on Sweet Clover

FRIEND SCHOLL:—You ask for us to give you our experience with sweet clover. I haven't had much, but I will tell what I know.

I sowed 3 pounds in September, 1903. In the summer of 1904 it grew 6 feet high, what the hogs left of it. It was sowed on sandy land with clay foundation. It had white blooms on it, and bees worked on it strong; but there was not enough of it to tell about the amount of honey it gave.

Well, Mr. Scholl, I have not told you very much, but I hope it will help you a little. T. R. GREENER.
Grapevine, Tex.

"Full-Blood" and Other Bee-Cranks

The following clipping hails from a Texas agricultural paper that has a "bee-column" in it:

I am somewhat of a bee-crank, but not a full-blood one. I have 14 hives. I have the Patton gum-hive. I have hived lots of bees, but have never been able to find a queen through hiving yet. Probably you will say I don't know one when I see it, but I think I do, for I found one once in an old hive after the bees had all died out.

Some one please tell me how to find a queen in hiving them. I guess you full-blood bee-cranks will think it funny, but I will think it more the funnier if I can find one alive.

It was "most the funniest" though when the replies from about a dozen of the "full-blood bee-cranks" appeared in the next issue with a dozen different ways telling how the questioner could have the fun of finding a queen alive.

Introducing Queens With Tobacco Smoke

A few mornings since I found a very small swarm clinging to the leaves of a grape-fruit tree in my home yard, which evidently had settled there the previous evening, probably having been driven out of some tree in the woods by ants—my colonies all showing up as usual.

I hived the swarm, putting 3 combs of honey, bees, brood and eggs; in the absence of queen-introducing-cage conveniences I smoked them, thinking that by giving them all a smoky odor the queen might, under the circumstances, be accepted; when, too late, the hive was opened the ball of bees was disintegrating, and the dead queen being dragged toward the entrance, some bees still attempting to sting her.

If I had not used smoke would it have been any more likely to have been successful? or what would have been the best method of procedure? W. F. MCCREADY.

It seems that perhaps the swarm was not queenless at all, hence having 2 queens one of them was destroyed. With the few cases that I have practised in using tobacco smoke to introduce queens, I have been successful; but this method was never used very extensively by me.

Bee-Keeping in Uvalde Co., Tex.

An extract from an article on bees in Uvalde Co., Tex., by Mr. J. K. Hill, one of the leading bee-keepers of that section, and published in Dallas (Texas) Semi-Weekly News, will give one an idea of the extent of the bee-keeping industry in this single county of Southwest Texas:

We now have about 17,500 colonies of bees in Uvalde county. Eight years ago there were only about 6000 colonies. This shows how the bee-industry has grown in recent years. The value of the bees and appurtenances for the management of same are worth about \$137,500. What is termed a full honey crop in this country is 120 pounds bulk comb honey per colony. Should every colony in this country yield this amount it would give us 2,100,000 pounds of honey. This

sold at the average price of 10 cents per pound would bring to the bee-keepers \$210,000, or about 150 percent on the investment.

Do not think that I mean to say that this amount is made by us bee-keepers, for every man in the business does not understand the proper management for profit. The bee-business is a scientific study; in fact, as fine a study as law or any other scientific study, and when properly managed under just ordinary conditions, should yield 120 pounds per colony.

I harvested 183 pounds of comb honey one year, 222½ pounds another, 146 pounds another, and 202 pounds average per colony. The latter crop was harvested by hired help entirely, and was not satisfactory under favorable conditions that year, as that year was the best yield in the country's history. There was produced about 1,500,000 pounds.

One of the chief things in securing the best results from bees is in the control of swarming. When this is mastered the bee-keeper is on the road to success. Some time in the future I will attempt to explain how to manage bees so as to get the best results.



The "Old Reliable" as seen through New and Unreliable Glasses.
By E. E. HASTY, Sta. B. Rural, Toledo, Ohio.

Some Queen-Rearing Comments

Why, Mr. Alley, those Italian fellows were too honest to profit any by your book—after having stolen it entire with the sole exception of your name!

Instructive to see that Mr. Alley himself states that his Adels are of Carniolan origin and not of Italian origin.

Instead of saying that all other yellow bees came down from Cyprians and Holy Lands, I would amend by saying that the primitive yellow bee is not now to be found, but that the Cyprians and Holy Lands represent it more faithfully than other yellow bees do—all being descended from it. Page 404.

"Keep Colonies Strong" the Watchword

Base and foundation of successful bee-keeping to keep colonies strong—and this done only by having room enough in the brood-chamber. These are indeed pretty forcible words from C. P. Dadant. Page 405.

Our "Prime Swarm" a "Head Swarm" in England

And this is hardly an admirable or praiseworthy circumstance. When we get something new of course a new word appears as the name for it. Presto, our English speech-partners rather take pains to call it by a different name. When they get something new I fear we are similarly guilty. So that which is an "elevator" here is a "lift" there; and that which is a railroad "switch" here is a railroad "shunt" there—and, behold, on page 406, a "prime swarm" is a "head swarm" (Laugh all ye little children with nothing else to do but laugh), to the puzzlement of Yankee readers. If this sort of thing keeps up, and the world stands thousands of years enough, the result will be two different languages. Mad! Hope the British language then will be to the American about what the Welsh is to the English now.

Getting Things Down Fine

Lots of wisdom in the Stachelhausen article on pages 406 and 407; but it strikes me that he rolls his gold-leaf thinner than the metal will bear. If the proper expert should go over it with sharp spectacles he would see lots of holes, may be.

Poppy and Hollyhock as Bee-Attractors

Nice for those who are intense lovers of both flowers and bees to select for their most-constantly-in-sight beds the flowers that attract bees and make a fine floral display, too. How came Sister Wilson to omit the poppy from the list? From her Hamlet she has left Hamlet out. I think there is no extra-nice flower so sure to draw lots of bees as

American Bee Journal

the poppy. It has been suspected that something else than either pollen or honey makes the bees so wild over poppies—but that doesn't signify when the object is simply to get the bees into our floral view. The hollyhock also draws bees well, at least it often does. The old single kinds draw rather better than the grand Chaters which present-day floriculture would want. And great sport it was for the children to capture bees without danger by closing a hollyhock over them. Even if it was a bumble-bee, all the same. Alas, my prime favorite among the flowers does not draw bees at all—so I can't propose that for the list. Page 408.

Water as a Swarming Discourager

Dr. Miller is quite right that it is hard to stop the swarming-act, once begun. Yet I can give a method which will succeed if you can be on hand soon enough—say when not more than a quarter of the bees are in the air. Squirt a powerful and undivided stream of water into the entrance. Do it *relentlessly*, with nozzle pressed to the entrance, till most of those inside are wet. It doesn't seem to do much harm; but seeing (as he says) they'll be at it again next day, the occasions are few when it is worth while. To set a big wire-cloth catcher right over the hive is rather better practise—but that is not what was asked for, and it has its own drawbacks, also. Page 409.

Not a Hard Bee-Puzzle

The puzzle propounded by H. D. Black, on page 410, is not a hard one, I think. In a location where bees can get a surplus only one year in 10, one should not expect them to have so much brood at one time as in a good location. Very likely the pollen-resources of the place may be still poorer than the honey-resources.



Chicago-Northwestern and National

BY DR. G. BOHRER.

THE Chicago-Northwestern and National Bee-Keepers' Conventions, held in Chicago, on Dec. 19, 20, and 21, 1905, probably constituted as able a body of bee-keepers as ever assembled in this or any other country. I will name a few of them:

M. M. Baldridge, of Illinois, a veteran bee-keeper whom I met at the first convention of bee-keepers of a national character ever organized in North America, which was during the winter of 1871, at Indianapolis, Ind. I cannot recall any others who were there that are now living. It was called "The North American Convention of Bee-Keepers," in order that it might embrace our cousin bee-keepers from Canada, as there were one or two present. Among them was Rev. William Fletcher Clarke, who was something of a writer, but probably not a man of extensive practical experience in apiculture.

At Chicago there were several Canadian bee-keepers present who are intensely practical. I say "intensely," because they demonstrated by their mode of discussion of any subject, that they have but little use for any thought not backed by experience.

Then, there was present that veteran, C. P. Dadant, who was one of the Rev. L. L. Langstroth's greatest friends and admirers, and who, with his father, revised Langstroth's book on bee-keeping, and who in practice, has blended the ideas of both Langstroth and Quinby by using the length of frame used by the former and the depth used by the latter, which is about $2\frac{1}{4}$ inches deeper than the Langstroth frame. That Mr. Dadant is a most successful bee-keeper no one will question who is familiar with him as a business man.

Besides Mr. Dadant there was another stalwart bee-keeper, as well as the author of "Forty Years Among the

Bees,"—Dr. C. C. Miller—and his assistant in apiculture, that amiable, distinguished, and exemplary lady, Miss Emma M. Wilson, who edits the Sisters' department of the American Bee Journal.

N. E. France, our untiring general manager, was there, who has been the medium through which many differences have been adjusted, and foul brood diagnosed and exterminated.

There was also present Mr. Whitney, of Wisconsin, another thoroughly practical man and an enthusiast, of 77 summers.

Others present were: Mr. Hershiser, of New York; Mr. Hilton and Mr. Hutchinson, of Michigan; the latter being not only an author, but the editor of a bee-paper. Other editors of extensively patronized bee-papers, who were in attendance at this convention, were Ernest R. Root, W. H. Putnam, and George W. York. Besides these there were nearly 200 ladies and gentlemen of extensive practical experience in bee-keeping.

The discussions of this gathering of distinguished bee-keepers are now on record, and I hope that the same will, by installments at least, be given to the bee-keeping public.

On account of a shortage of time I did not have the pleasure of being present at more than two sessions of the National, consequently I have little comment to offer in regard to its proceedings. At the Chicago-Northwestern session that I attended, the question as to which has the brighter future, comb or extracted honey, was considered. I, being called upon, stated that with a strong National pure-food law, extracted honey would be far the greater product, as people will in time learn that honey free from wax (which is wholly indigestible), is not only the most wholesome form in which to use it for food, but that it is also the cheapest to the consumer, as the producer can put it on the market cheaper than he can afford to place comb honey there.

The people are learning very rapidly that such a thing as artificial comb, filled with artificial honey, sealed by human hands, is not accomplished. They are also learning that the producer of comb honey, as a rule, sells his honey by weight, and that the retail dealer sells it very largely by the piece, so that the consumer of section-honey pays the same price for a light-weight section as he does for a full-weight section, or one that weighs a pound. This fact is doing, in my opinion, a vast amount of harm to the section-comb honey market; but I hope to be able to discuss this and other questions that were before the conventions, in the near future. Lyons, Kansas.

Frank R. Cheshire on Foul Brood

BY REV. ROBERT B. M'CAIN.

THE name at the head of this article is one to conjure by. The world has not known a higher authority in the realm of scientific bee-culture than Frank R. Cheshire. It is a great wonder that his name does not more often appear in the discussion of the "deep things" of our craft. Of his two volumes which contain the results of his monumental work on "Bees and Bee-Keeping," the first, which is devoted to the scientific aspect of the subject, is undoubtedly the most thorough, exhaustive and exact work on the subject extant. The second volume, which treats of practical bee-keeping, is larger in size, but is in the main out of date owing to the great improvement that has been made in hives, equipment and the practical management of bees in recent years. Chapter 12 of this second volume is an exception to this statement. It is entitled "Diseases and Enemies," and contains the most comprehensive and thorough discussion of the subject of foul brood, from the scientific point of view, to be found in literature.

In justification of the review of this subject at this time, a quotation from the closing paragraph of the chapter seems sufficient. Mr. Cheshire says:

"Our modern hives keep the old pests (such as wasps, spiders, mice, etc.) pretty much at bay, but infectious disorders are on the increase, and are also appearing in new forms. It is no safeguard to shut one's eyes to the danger. Safety rather lies in a knowledge of the magnitude of any evil, and respecting this one, slackness is all but criminal."

The greater part of the chapter under consideration is

American Bee Journal

given to the discussion of the disease which is commonly called "foul brood." He discusses the disease under three divisions: 1. "The symptoms and the nature of the disease. 2. The means of its propagation. 3. The method of its cure."

In regard to the symptoms of the disease he gives those tests which are used throughout the bee-keeping world, viz., the sunken cappings of the brood, the coffee-colored larvæ, the characteristic glue-pot odor, and the viscous nature of the contents of the diseased cells. It is in the discussion of the nature of the disease that he displays his masterly power of investigation and presents some facts which are not generally known.

After proving that *Bacillus alvei* is the germ which causes the disease, he proceeds to show how these minute microscopic organisms multiply in almost inconceivable numbers. His investigations led him to the conclusion that the name "foul brood" is misapplied, since the germ does not confine its operations to brood alone, but attacks the mature bees of the colony. It is doubtless true that the majority of the bee-keepers of the present time think of this disease as affecting the brood only, and nine-tenths of the supposed remedies of the disease are based on that theory.

Cheshire found that "foul brood" is a disease of the blood; that queens, workers, and drones are affected by it, and that they die from the effects of it. Moreover, he proved that the ovaries of the queen and the spermatozoa of the drones were subject to the ravages of this disease, and that eggs, either before or at the time of their deposition in cells, could be, and were, objects of attack of *Bacillus alvei*. This statement will help many to understand the rapid dwindling of colonies that seemed to be very slightly affected with the disease so far as the brood was concerned.

Having established, by investigation, the fact that *Bacillus alvei* produced a "chronic disease" in full-grown bees, including the queen, he at once concluded that it was possible and even likely that the disease would be found in the ovarian track and in the eggs of the queen. It is commonly known that foul brood in some cases appears to be particularly destructive amongst the smaller larvæ, and Cheshire judged that in these cases the eggs contained the germ of the disease at the time they were laid.

He explained to a fellow bee-keeper what would be the probable peculiarities of the disease in the early stages of the brood, and later obtained from him a queen whose brood developed the disease soon after hatching from the egg. She was alive when she came to his hand, but he at once began to dissect her, finding her ovaries abnormally yellow, and very soft. Detaching the ovarian tube he counted 5 bacilli "swimming along with a lazy sort of progression." Having taken out "a half-developed egg, and crushing it flat, 9 bacilli were quickly counted."

It must be remembered that the bee's egg is, to the size of a bacillus, enormous. "Its length of 1-14 inch, and diameter of 1-70 inch, would enable it to accommodate 100,000,000 spores of this organism, which stands to the egg itself as a single drop to 1,500 gallons."

It certainly does not diminish the terrors of this dread disease when we are made to understand that in the act of mating the queen received the germ of the disease into the vulva because the drone himself was affected. Further than this, it was Cheshire's belief that the spermatozoa of the drones may be so devitalized by foul-brood germs that when they enter into the eggs to differentiate the sex their office is only partially performed.

Turning from the nature of the disease to the consideration of the means of propagating it, we have some ideas that are not altogether in harmony with current thought. In nearly all of present-day discussion it is confidently asserted that honey is the seat of the contagion, and that bees carry the disease into their hive by robbing. Cheshire says, "While I have searched most carefully in honey in contiguity with cells holding dead larvæ, have examined colonies dying out with rottenness, inspected extracted honey from terribly diseased colonies, and yet in no instance have I found an active bacillus, and never have been able to be sure of discovering one in the spore condition. . . . I have now discovered that it is impossible for bacilli to multiply in honey, because they cannot grow in a fluid having an acid reaction."

Such minute bodies as bacilli, 1,000,000,000 of which may be contained in the body of a dead larva, must occur

in honey as an occasional contamination, but the idea that they grow in honey or that honey is the usual means of their introduction into healthy colonies is, according to Cheshire, contrary to all evidence.

If an acceptance of these ideas would lead to the abandonment of some current notions about foul brood, it would by no means lessen vigilance and care in handling the disease. For while Cheshire's investigations led him to place little importance on honey as the means of propagating foul brood, he emphasized the fact that the disease is exceedingly infectious, and that the agencies which are constantly engaged in its dissemination are all too numerous. Chief among these agencies are the bees themselves which, owing to the feathery nature of the hairs of their bodies, gather and carry large numbers of the germs with them into their colonies. Within the diseased colony the nurse-bees are constantly engaged in carrying the disease from the sick to the healthy larvæ. It is likely, also, that the full-grown bees of the colony are contracting the disease through air-tubes and at the segments of their abdomens.

Among the agencies for the spreading of the disease must be named the bee-keeper himself. The germs of foul brood are so small that ordinary particles of dust are huge in comparison to them. The bee-keeper's hands, made adhesive by propolis, carry the spores or bacilli, and so may transfer them, even hours later, to healthy colonies.

This is a point worthy of the attention not only of those who have the disease among their colonies, but also those whose business it is to inspect bees. For while they may visit an apiary with worthy motives and with legal authority, they may nevertheless become the means of propagating that which it is their purpose to eradicate.

As a precaution against infection, in addition to the utmost care, which should always be exercised, it is advised that a solution of corrosive sublimate, $\frac{1}{8}$ ounce to one gallon of water, be used on hands and tools. Great care should be taken not to let the clothing of the operator come in contact with the disease.

In concluding this review it will be interesting to note that the cure in which Mr. Cheshire places greatest confidence, is almost identically the same as some which are being exploited in certain quarters as new discoveries. He counsels the destruction of infected brood and comb, if the case is bad, but advises the preservation of the hives and frames if the operator will be careful to disinfect them. His treatment is given in his own words:

"If the bees are worth saving, make a swarm of them into a skep, and transfer 48 hours later into a frame hive. If there be much brood, and the case not a very bad one, and the robbing season not at hand, unqueen, cutting out all royal cells 11 days later, and giving from a healthy colony a royal cell just sealed. When the queen hatches—by which time nearly all the worker-brood will also have left their cells—make a swarm of them into a skep, and transfer, on the second day, into a frame hive. The queen will, in 7 or 8 days, begin to lay and probably all will go well."

This is but an imperfect outline of Cheshire's masterly discussion of this subject. To be appreciated the original must be studied in its entirety. The writer hopes that the reading of this outline will inspire some to take up the entire work, especially the first volume, and give it careful examination. Certainly we can not inquire too carefully into the nature of these little toilers which work so faithfully for us. The more we know of them and of the things that affect them either for good or for ill, the better will we be prepared to handle them for their welfare and for our own profit.

Yorkville, Ill.



Best Hives for Wintering and Extracting

BY W. W. M'NEAL.

THIS is beautiful spring weather. The air is laden with the sweet perfume of the apple and cherry blossoms, and the bees are having a fine time. I had not seen the apiary for 6 months, and the eagerness with which I sought it upon my return home a few days ago can well be imagined, for the hum of the bees is one of the delights of my boyhood

American Bee Journal

days, that grows more enchanting as the years hasten by. My enthusiasm fairly bubbled over as I noted with what splendid success I had met in wintering each and every colony.

A good business queen, in a good, strong colony, with plenty of well-ripened stores, is the pivot upon which success must be turned in solving the wintering problem. These are cheaper than packing boxes, and ever so much more encouraging to look upon; and it's Nature's way.

To show the readers of the American Bee Journal how little I have need of winter-cases, I will describe briefly the hive I am using. Some bee-keepers may say I am not up to date when I state that my hive is simply a modified Langstroth. But I defy any one to produce honey more cheaply in the so-called "improved" hives.

I made the hive a little shorter and some deeper. The brood-frames are of the standard Hoffman style. The super contains 9 extracting combs of standard depth, $9\frac{1}{4}$ inches. So does the brood-chamber, excepting that these frames are 11 inches deep, outside measure. The super is covered first with a heavy piece of enamel cloth, then a $\frac{3}{4}$ -inch board cover cleated at both ends to prevent warping; and then the very important, if not almost indispensable, telescopic gable cover. It is to this feature of the hive, together with the $\frac{3}{4}$ -inch deep entrance, and 5-inch extension of a portico, that I wish to speak more particularly than to the number or depth of brood-frames.

I am firmly of the belief that bee-keepers have made a mistake in discarding the deep, telescope gable cover. I have never known a cover of that kind to be blown off the hive by the wind; and during the storms of winter and the scorching heat of summer it affords the very best protection to the bees at the least possible expense. For winter use it is supported by the portico cover, and a couple of cleats nailed to the hive-body about 1 inch from the top edge of the hive. This effectually sheds the rain and keeps the hive dry. In summer, when the super is on the hive, it rests on a couple of cleats nailed to the extracting super about 3 inches from the top edge. The cover being 10 inches deep in full, or 8 inches to the eaves, it is sufficiently heavy to take out any perceptible twist in the super that may cause the super to kick up at one corner a little, thereby permitting the escape of heat or energy; and yet it is not heavy enough to be burdensome to handle. By boring three $\frac{3}{4}$ -inch holes in each end-piece at equal distances on a line a little below the corner of the eaves, the ventilation will be ample over the flat super-cover inside. To my notion, this arrangement for protection, when used in conjunction with the large entrance, is far better and more economical than the old-time shade-board and heavy stone.

Then, again, in the fall of the year all that remains to be done to prepare the bees for winter is to remove the extracting super, bore a couple of small holes in the super-cover, several inches apart, and cover them with window-screening tacked down to hold it in place. Now fill the telescope cover nearly full of fine blue-grass hay, or wheat or oats straw. Forest leaves afford good protection, but they spill out worse than the hay when handling the covers afterward. But the hay soon takes the shape of the inside of the cover and is easily returned if, perchance, it falls out when lifting the cover. In theory this might seem to be an objectionable feature, but in practice it will be found that a filling of fine hay will, if properly pressed down when put in, adhere to the cover so well as to cause no trouble, practically, at all. The holes in the gable-ends of the cover permit the air to circulate freely over the packing, which keeps it perfectly dry and sweet.

That is the way I winter my bees here in Southern Ohio. The apiary always looks neat and tidy. There is no tearing up or changing of locations; no packing boxes to get out and repaint; no loss of bees by unfavorable conditions in the weather at the time of packing; and no queens stung by the bees getting mixed up and entering the wrong hive. If any one knows of a way more simplified, I would like to hear of it.

When it comes to the question of the best size of frame for extracting purposes, I know to a certainty that more honey can be secured, and at less cost, by using the Langstroth frame, or a frame of that capacity. Bees will enter a 10-frame Langstroth hive-body, when used as a super, (and it is well covered to prevent the escape of heat),

about as quickly as they will a shallow one. The cost of construction is very nearly the same, and the cost of manipulation is practically the same at the start; but before the season is far advanced the odds are greatly in favor of the full-depth super. This fact will be appreciated when one has out-apiaries to look after, or in any case when the apiary can not be visited often. Just as much time will be consumed in putting on a shallow case as one of double capacity, and, furthermore, such manipulation necessitates a return trip in less than half the time that the larger one will. Were 2 of the smaller ones given to the bees at once, the space thus to be occupied would necessarily be colder by reason of the increased chances for the escape of warm air through the joints. Any one can prove to his own satisfaction, that bees will not enter 2 shallow cases as readily in early spring as they will a large one of equal capacity.

There is more pleasure in extracting from shallow frames than deep ones, but I fear that in many cases the desire to keep the crop separate by means of shallow frames or frequent extracting has more often resulted injuriously rather than promoted the quality of extracted honey in general. Honey that has been stored in large combs and left on the hive till it is thoroughly ripe, though there has been a blending of flavors, is far superior in quality to honey of a certain distinct flavor, but being in a less ripened condition. When I place a super of Langstroth combs on each of my colonies, separating it from the brood-chamber by means of a wood-zinc honey-board, and covering it with a heavy piece of enamel cloth, then the flat super-cover, and last the large ventilated telescopic gable cover, I know it will not be necessary for me to make a trip back there again very soon. And I also know that if there has been any honey in the flowers, I will take a box full of honey from each of those hives when I do return.

Reader, if you know of any more simplified method for the production of extracted honey, giving equally certain and pleasing results, I would be delighted with the knowledge of it.

Wheelersburg, Ohio, April 26.



Ruches and Ruchers in Europe

BY ADRIAN GETAZ.

RUCHES and Ruchers—what a queer title! Well, in French ruche means hive, and rucher the place where the ruches are kept. However, the word rucher is more specially applied to the bee-houses, or rather, bee-sheds, in which they are usually kept in Europe. During the last 20 or 30 years many apiarists have increased considerably their apiaries, and the term "apier" has come into use to designate the keeping of the ruches in the open ground.

The rucher is a necessity with straw-hives. A straw-hive completely soaked in wet weather would be a mighty poor home for the bees, or anything else. In a recent contribution to one of our exchanges, Mr. Greiner gave a description of straw-hives, and expressed the opinion that they might possibly come into use here. Well, "I don't know," but the possibility is rather remote. The straw-hives of Europe are made by the peasants during the winter evenings, and sold at a very low price. Made in a factory at factory prices they would cost considerably more than the wood hives.

THE RUCHER.

The rucher is an excellent institution. It is a kind of bee-house with an open front. The front wall is replaced by 2 or 3 long shelves on which the hives are placed. The ends and back are closed, thus forming an ample protection against the wind. The space between the shelves and the back wall is sufficient to permit the apiarist to do his work. A roof covers the whole and extends sufficiently in front to protect the hives against the rain and snow, and also against the hot sun during the middle of the day. The hives have no bottom, that is, not often; the shelves constituting the bottoms for all. An excellent idea of what a rucher is can be suggested by the engraving representing Gravenhorst's apiary in the "A B C of Bee Culture," only the passage behind the ruches is not shown.

The passage being comparatively dark, the bees do not frequent it to any extent, and therefore do not bother the apiarist when at work. Another advantage is the possibil-

American Bee Journal

ity of working during rainy days. This alone would be an immense advantage to the queen-breeders who have to do their work at certain determined days, whether it rains or not. In winter, straw or some other material can be packed around the hives, and being kept dry is far more effective than when exposed to the weather. The ruchers are generally turned toward the south and the ruches receive the sun's rays during the morning and evening, while they are protected against the sun during the middle of the day by the projecting roof. A better kind of shading apparatus could not be devised.

FRAMES.

Many of our writers are inclined to consider the hives opening behind and having the frames across as an awkward and old-foggy contraption.

Well, there is no doubt that when the hives are in the open air and placed right on the ground, the frames must come out at the top, but it is easy to see that in a rucher the case is altogether different. To pull out the frames at the top, when another shelf or the roof is immediately above it, is not exactly a very convenient arrangement—not nearly so convenient as frames placed across and taken out from behind. The frames thus used are provided with nail spacers on the front side, so as to prevent them from being pushed too close to the preceding ones, and with a kind of wing on the back side, to get hold of them when they are taken out. An objection has been made here to that kind of arrangement, that it is necessary to take out all the preceding frames when you want to get at a certain one. I never could see the point. Neither can I see an advantage in being able to handle the Hoffman frames by 2 or 3 at a time. When I want to inspect a hive for queen-cells, amount of brood or honey, or any other purpose, I want to see all the frames. Some people insist on the necessity of having hives light enough and small enough to be carried easily, or frames that can be moved and carried by 2 or 3 or more together; just as if the apiarist's business was merely to be "toting around" hives and frames just for the fun of it.

The European frames are all deeper than ours. The Dadant size, or about, is usually adopted for the hives having supers. The shape is sometimes square, usually longer than high, with a half-depth frame for the supers. Another type is the De Layens. This is something like what we call here the Long Ideal hive and frames. The frames for that purpose are usually much taller than long. As many as 20 and even 24 are used in a hive. A division-board permits their being added successively as the honey-flow progresses.

Very few people know that the original Langstroth frame was 2 or 3 inches deeper than the one we call by that name now. Exactly why the change was made I can not tell, but I suppose on account of the cheapness of the small frame. Not the frames themselves as much as the hive containing them. With a low frame, a mere box made of 4 planks about 10 inches wide was all that was needed. By reducing the number of frames to 8, a wide piece for the bottom and another for the top were sufficient. To reduce the size still more the top-bar of the frames was made only $\frac{1}{4}$ of an inch thick, and the spacing reduced as much as possible. And here you are. "Simplicity," sure enough. And cheapness, too. And it is this very cheapness that has made the movable-frame hives as popular here. At the price which a better hive would cost, there would not be more than one where there are 20 now. We are a nation of bargain-hunters, anyway. Our women will go to a bargain counter and pay 98 cents for a worthless article, when a good one can be had for a dollar in a regular store. Our bee-keepers kick at the price of a good, big Dadant hive, and then have to pile 2 or 3 small Dovetail hives one upon another in order to get a sufficient space. Where the saving of money comes in, I don't see, not speaking of the increased manipulations.

WINTERING.

It is admitted that the bees winter better in a straw-hive than in a wood one. It has been suggested that the straw absorbs the dampness of the hive and therefore creates more healthy conditions; I doubt this very much. After a year of use the interior of a straw or any other hive is completely coated with propolis and impermeable by moisture. But there may be other things in favor of straw-hives. If kept dry in a rucher, the straw is about as good protecting material

against the cold as could be devised; yet a good chaff-hive or similar protection ought to answer the purpose as well.

But for my part I am well satisfied that the superiority of the straw or even wood box-hive lies in another direction. Anyone who has transferred bees from box-hives knows that the combs are usually very irregular. It seems that the bees start at random at several different places, and then fill up the best way they can with small, narrow combs. The result is that there are numerous passage-ways between the combs, and that the cluster of bees during the winter can gradually move anywhere in the hive where there is some honey.

But in a frame hive the case is altogether different. The bees are separated by combs occupying the entire width and depth of the hive. Sometimes one of the spaces (or several) between the combs gets empty of all its honey, and the bees, being unable to go around the comb on account of the cold, perish there. Occasionally the cluster moves gradually toward one end of the hive, and when the honey at that end is out, they are unable to go to the other.

Somebody will say here that Doolittle says that it is not so, that the bees which die in the winter are old bees that have reached the end of their allotted life. Perhaps it is so when the bees are wintered in a cellar—if not always, at least sometimes. With a cellar sufficiently warm, it may be possible for the bees to get around the emptied combs and reach the honey that may be elsewhere.

But we can reach the aim without having to go back to the box or straw hive. Many European apiarists use very tall frames, and the bees, having their honey above, can always follow it, as the heat of the cluster goes above and permits them to move up.

There is, however, one objection. While tall frames are the best for hives of the De Layens or Long Ideal patterns, they are not adapted to use in connection with supers. Tall frames mean shorter frames and less of them, consequently less space at the top; smaller supers and more of them, and the upshot would be something like the tower of Babel during the summer-time—something that the bees would find very difficult to ventilate properly.

The celebrated Italian apiarist, Dr. Dubini (now dead) used to manage it in a different way. He always made several holes in the combs for passage-ways, and to prevent the bees from plugging them he put a small tin tube in each. I suppose that the holes were about $\frac{1}{2}$ inch in diameter.

I have an idea that such holes would be a benefit to the queen. In passing from one comb to another, she must spend some time in going over or under, and, after it is done, hunt up the empty cells. Passage-holes would reduce the time lost, and possibly help to prevent the queen from going into the supers, as this very likely occurs when she passes over the combs.

Knoxville, Tenn.



Willows and Bees—Brood-Nest Heat

BY G. M. DOOLITTLE.

WISCONSIN asks Dr. Miller this question, on page 369: "I would like to plant lots of willow trees of the yellow-brush kind. Bees work on them very much. Do they yield honey?"

To this question Dr. Miller replies: "G. M. Doolittle is the man that knows all about willows, and somewhere he has told us about the different kinds, but I don't remember where. If I remember correctly, some of them yield honey, some pollen, and some both. Perhaps he will be kind enough to tell us briefly again."

When the Doctor tells any one that Doolittle knows all about willows, Doolittle is sure that he is making a mistake, for there is "lots" that Doolittle does not know about the willows, right in his own locality. I wish I knew more about them, for I consider them as of the greatest value to our bees. In fact, I know of nothing which so stimulates the bees to active brood-rearing as these very same willows; especially those which yield honey, as does the "yellow-brush kind" that Wisconsin asks about. But this kind is not the first to blossom. These are what are called the "pussy willow" here.

We have several kinds of these pussy willow here, which put out their blossoms quite irregularly. Some are a month

American Bee Journal

earlier than others, and some of the buds on the same trees or bushes are 10 days later than others. The kinds which seem to attract the bees most are the black willow, upon which the kilmarnock is budded, and those which produce a long, cone-like flower similar to the black willow. From these two kinds the bees obtain large quantities of pollen, but as far as I can ascertain, no honey. The flowers are of a rich orange color, and consist of a center, out of which spring hundreds of little thread-like filaments, upon which the pollen is supported. It is very interesting to see the bees work on these flowers, as you can see their motions so plainly, for the tree or bush does not grow so high but what some of the lower limbs are about on a level with the eye. It naturally grows on low, swampy ground; but with a little culture to start, will readily grow on dry ground. The golden willow (the kind with the "yellow-brush") and the white willow give us our first honey, unless I except the weeping willow, which is grafted or budded on the black willow. This last is about 3 or 4 days earlier in blossoming, and where there are many of these weeping willows, they would be quite an acquisition to any apiary located near them; but as there are very few trees of this kind about here, there is not enough to make any perceptible show in an ordinary apiary.

Neither of these last 3 willows mentioned give any pollen, in my opinion, for from a close observation for years I have never seen a single bee with any pollen in her baskets while she was at work on them. When these willows are in bloom, and the weather is warm, the bees will rush out of their hives at early dawn, coming home so loaded that they will drop short of the entrance, the same as they do in a heavy clover or basswood yield of nectar. And they work on these willows all day long, the same as they do on basswood. The flowers are similar to those which grow on the birch and poplar, being of long, tag-like shape, as large around as a slate-pencil, and from $1\frac{1}{2}$ to 2 inches long. These tags or blossoms secrete nectar so profusely, when the weather is right, that it can many times be seen glistening in the morning sun, by holding the blossoms between the eyes and that orb, and on two occasions I have seen whole trees with the nectar sparkling like so many diamonds partially hidden amongst the leaves; while the trees resound with the busy hum of the bees from morning till night.

From the few trees along the creek near here, the bees store often from 10 to 20 pounds per colony while the trees are in bloom. The honey is quite similar to apple-blossom honey, and of a nice, aromatic flavor. The golden willow yields the most nectar of any willow with which I am acquainted, and as this first honey is used for breeding purposes, it lays the foundation for a surplus from the clover and basswood, by filling the hives with brood at just the right time so that the bees from this brood come on the stage of action as laborers just when these surplus-honey yielding flowers give us our crop for the year. For this, the great value of the willows will be seen.

"RETENTION OF HEAT IN THE BROOD-NEST AGAIN."

Under the above caption, on page 441, some experiments are given, as conducted by Dr. Miller, to see whether Doolittle was right in claiming that the crust of bees prevented the heat from the cluster escaping into an upper hive. If I shall not be considered too inquisitive, I would like to ask whether the sun was shining on the *hive* when the Doctor conducted his experiments; for, if so, he would have gotten a higher temperature in that hive than he did with his thermometer in the shade, in the open air, unless his thermometer in the open air stands in the sun at all, for all records of open-air thermometers are given "in the shade." So, if this upper story stood in the sun and his outside thermometer in the shade, the difference which he reports between the temperature of the two, would be hardly as great as I would expect under such circumstances.

Again, the only time when such experiments can be tried, to give any correct idea, is at night, for when bees are working "busily," as the Doctor reports that his were at the time of his experiments, the crust of bees is sure to be broken to a more or less extent, so that the heat escapes from it to quite a large degree. Then, with the mercury at 50 to 60 degrees in the shade, outside, the crust is never very compact, and when the mercury goes to 70 and above,

the crust bees very largely abandon their position, for they are not needed under these circumstances, as the general heat coming from the hustle and bustle of the hive is sufficient to keep up the necessary brood-temperature in the brood-nest.

I am pleased to see that any have gone to experimenting, for good will come from it; and this note is only "thrown in," to help the matter along, by guiding a little in the "right direction."

Borodino, N. Y.



Mints as Honey-Plants—Moths

BY PROF. A. J. COOK.

THE mints—Family Labiata—are a close second to the legumes among honey-plants. Like the legumes, the flowers are irregular in form, which fact alone would warrant the assertion that they are rich in nectar-secretion. Many regular flowers, like the common orchard bloom, or rosaceous plants—the linden and tulip—are profuse in the secretion of nectar, but the very fact of irregularity is conclusive on this point. Indeed, there can be little or no doubt but that in the evolution of these plants with irregular flowers the modified bloom had special reference to the secretion of nectar, the visits of bees and other nectar-loving insects, and the valuable necessary act of pollination. While we know that many plants, like some varieties of our apples and pears, which have regular flowers—by which we mean that all the petals or flower leaves are alike in size and form—must be cross-pollinated to produce seeds, we are equally certain that all with irregular flowers require this cross-pollination, or at least are the better with it. Irregular flowers, then, such as we see in the mints and legumes, always speak to us of two truths—the necessity of cross-pollination, and, with suitable moisture and nutrition, the invariable presence of nectar.

We are not surprised, then, that the sages, motherwort and horse-mint, are among our best and most valued honey-plants. The mints are typical bilabiates. That is, while the flower is typically of 5 parts, or constructed on the plan of 5, the petals are so united as to appear in 2 parts. A type of flower familiar to us all is the common snap-dragon, which, though not a mint, is also a bilabiate. Thus, we may say such flowers have an upper and lower lip, and a throat which is more or less open, as the work of cross-pollination makes most advantageous. The stamens which bear the pollen are high up in this throat, as is also the stigma of the pistil. As the bee or other insect pushes back into this throat for the coveted nectar-drop, its back becomes powdered with the pollen, and as it crowds into the next flower this pollen-dust is brushed off on the waiting stigma, and thus the bees become indeed the marriage-priests which unite the elements of the bloom, and insure offspring. As the pollen and stigma are not contemporaneous in time of ripening, we easily see how cross-pollination is insured.

Chief among the honey-bearing mints are the incomparable sages of California. These are not excelled even by the clovers or linden. The honey is white, delicate of flavor, and must ever rank among the very best in appearance and quality. Not only this, but the quantity is often phenomenal. This comes from the fact that the flowers are borne in long racemes or compact heads, and as the separate flowerets do not bloom all at once, but in succession, the plants are in bloom for weeks. The sages, then, are marvelous honey-producers, first, because of the generous secretions of each floweret, and second, because of the immense number of these flowerets and the long period of bloom.

The motherwort, catnip (which was so highly esteemed by the late Mr. Quinby as the best plant for roadside and waste-place planting), the famous heather of Scotland, are other familiar examples of the mints. Of the three most common families of plants conspicuous for their irregular flowers, each has one or more very noted honey-bearing species. White clover, alfalfa, sweet clover, and mesquite, are all famous among the legumes; white sage, black or ball sage, and horse-mint, are as important among the mints; while willow-herb and figwort are famous among the plants of the other most familiar bilabiate family—Scrophulariaceæ.

The legume family gives us our most valued cultivated plants, like clover, beans and peas. The mints are valuable for ornament, and extracts; while the figwort family furnishes us many of our finest ornamental plants, like the

American Bee Journal

tacomias and biguonias. The mints and figwort may well be planted in waste-places, for a goodly number of them will serve to fence out famine in the hives in case of failure of other honey-plants. Mr. Harbison—and who can speak with more authority?—feels sure that bee-keepers may well take pains to plant black sage, which he and many other bee-keepers of California think even more productive than white sage, where fire or other agent has destroyed it.

MIMICING MOTHS.

I have just had the pleasure of looking through one of the many fine collection of insects of Berlin. The clear-winged *Sesias* claimed my attention and admiration. They are moths, yet look astonishingly like bees and wasps, which they mimic in a wonderful way. This, no doubt, preserves them from hungry birds that otherwise would snap them up. These *Sesias* are borers, and the caterpillars boring in trees and plants often do serious harm. Here belong the destructive peach-tree borers and squash-borers. While these moths fly among bees and wasps in the bright sunshine of noon-day, and in form and color are so like them, they are yet easily told. Their body is tipped with a brush of hairs instead of the sharp, polished sting. Berlin, Germany.



Queen-Rearing—The Small-Nucleus System

BY HENRY ALLEY.

WITH the advent of the Langstroth hive success in apiculture rapidly advanced. From the box-hive system which was no system at all, no particular success could ever be expected. The beginner in bee-keeping has been taught by all the text-books on bee-culture that the only way to make apiculture a success was to "Keep all colonies strong." We should keep this fact in mind at all times, and print it in large letters, and post it in some conspicuous place in the apiary. Experienced bee-keepers well know that weak colonies are worthless and bring no returns of any kind. This not only applies to large hives, but to nuclei as well. I would as soon tolerate sick chickens in my coops as a feeble and weakly lot of bees. Of the two nuisances the former are much more desirable. No apiary can be run successfully on babyish principles. Every colony of bees, whether the hives be large or small, should be crowded with bees, brood and food, and each one should have a vigorous queen. If any other methods are adopted, failure will surely result so far as profits are concerned.

Now, first, the principles of honey-gathering are equally applicable to success in queen-rearing. Good queens can not be reared on the baby system, or by the half-starved and half-nourished way some people say they can. There should be plenty of bees to cover all the combs and brood of a nucleus, so that the temperature at all times may be kept up to the natural point.

Strong and vigorous queens are the kind that fill the combs with brood, the hive full of bees, and store the honey in the supers. The larger the force of bees, the more honey, and the larger the profits.

Has any one ever discovered that weak and feeble colonies of bees build queen-cells, and swarm in the natural way? The swarming sometimes takes place, but not in the natural way. What are the conditions under which bees build queen-cells, and swarms issue? Why, strong colonies, hives full of bees and combs full of brood. If the advice some people are giving bee-keepers is taken seriously, many bee-keepers will be dividing up their strong colonies into say about 40 small ones. Now, if a few bees work well in queen-rearing, why won't the same principle work well in honey-gathering? The fact is, such a system won't work well in any case. Don't expect to succeed in bee-keeping unless Nature's ways are pretty closely followed.

Some 12 years ago, Mr. E. L. Pratt had a queen-rearing apiary of baby nuclei about 2 miles from my yard. While Mr. P. could manage his system very well, it never would do for me, nor would it do for bee-keepers generally. Well, Mr. Pratt sold his entire outfit to me, and moved away. I converted the entire thing into kindling-wood, as I could find no one who wished to purchase it from me. His nucleus frames were $4\frac{1}{4} \times 4\frac{1}{4} \times \frac{7}{8}$ section boxes. Eight of these sections just filled a brood-frame about the size of the stand-

ard Langstroth frame. Now this whole thing in theory was very ingenious, but far from practical. I tried to use the small frames in the way Mr. Pratt did, but I could not induce any queen to deposit eggs, except in a few of the central combs. The queen did not take to the wooden partitions right in the center of the hive. Queens want a clear field to work in. I could not rear a strong colony of bees by any such arrangement.

Another great difficulty with the Pratt system was in the arrangement of the combs in the nucleus boxes. As the small combs had no projecting top-bar, the frames had to rest on cross sticks at the bottom. When opening such hives the bees naturally run to the bottom of the boxes. By so doing there is great danger of crushing the bees and queen when the frames are replaced.

If I understand correctly, the system above mentioned is now largely used by Mr. Pratt. I also understand that he now fastens the frames to the cover of the hive, so that all lift out together. The difficulties attending this method need not be explained here. All can see them at a glance.

The question is, Why is all this clap-trap arrangement in queen-rearing necessary? Can any one explain it? Dare any reader of the *American Bee Journal* rise up and say that such a contrivance is any improvement, or even as good as small combs constructed on and used as per the Langstroth system? Doesn't the reader see that the small hive (call it baby nucleus, if you please) having hanging frames and so constructed that each frame can be lifted out separately, is far more practical and much easier to manipulate in every way?

These new-fangled notions in connection with bee-keeping are perplexing indeed, and to those who love simplicity in all things used in practical bee-culture, they seem like a nuisance.

I am not tooting my own horn, as I have nothing in the way of bee-supplies for sale. My whole time is devoted to queen-rearing. To carry out the entire Pratt system of queen-rearing, one requires about a cart-load of fixtures. Some 60 pieces in number, and an expenditure of some \$8. This does not include hives for nuclei.

For many years I have used small boxes for nuclei. Perhaps they cannot be classed as "baby" nuclei, as each box is large enough to take four 5×5 frames, 3 pints of bees, and the boxes are kept full of bees and brood at all times, as much so as it is possible to do. The hanging frames are used, as they are easily and quickly removed without danger of crushing the bees. So long as these small boxes are kept well supplied with bees and brood, the young queens are sure to make a successful mating trip. There are sufficient bees to defend the hive against robber-bees, and the bee-moth. Now, I know from long experience that when such small nuclei are used, and not kept up in young bees and brood, the queens, when they make the mating flight, are pretty sure to be balled as soon as they enter the box. Mr. Pratt says this is not so with his baby-nucleus system. Try it, and see if I am not correct. Rather queer, isn't it, that bees behave so much differently in some parts of the country than they do in others?

In 90 percent of all cases where nuclei contain only a few old bees, and no brood, the young queens will be destroyed when returning from the mating flight. Young bees will not do such mean work, but bees, like the human family, don't stay young. Old bees are worthless in queen-rearing, and are a nuisance in the apiary at all times.

Speaking of these small boxes, I wish to say I rear no queens in them. Only the strongest colonies of bees are used by me in the production of queen-cells. My queens are kept in small nuclei after they hatch until they have filled the combs with eggs, and the queens are tested.

Now there may be many of the readers of this *Journal* who are contemplating making queen-rearing a business, and I am quite sure I can give some good practical advice to all such people.

If I were to start again in the queen-rearing business, I would not tolerate even the small boxes I now use in my apiary. Now these boxes are very handy and convenient, and almost inexpensive, but there are several reasons why I would not, with my present and past experience, use such a system again. At present I am established, and am sort of obliged to continue in the same old way. But take my advice. If one is about to enter the queen-rearing business,

American Bee Journal

adopt the standard Langstroth frame for nuclei. There are many reasons why you can and should do this. Some of them are these: In the first place, you would have but one size frame in the apiary. You all know that brood-combs of several sizes and styles are a nuisance in any bee-yard. I would use 3 frames (not less than 2 in any case) in all nuclei. When fall comes around, the queen-trade is over, and the nuclei can be doubled, say putting 3 in a large hive, and when so united they are likely to winter successfully. On the other hand, what would one have to go into winter quarters with if there were several hundred sickly baby nuclei that had but a few bees and no brood?

If the standard frame is used, the bees could be divided again in the spring after the hives are well filled with bees and brood. So you see, after the first cost of using standard frames for nuclei, the expense is really nothing, while all the nucleus colonies will be strong and in fine condition for any purpose.

By my nucleus system, in the fall I have a fine lot of bees and brood to unite for winter. They are united in October, making about 20 strong colonies in all. When fed up they appear to be in fine condition. Now I have tried for the past 20 years to winter the nuclei when in the above condition, and only with partial success. I find it quite difficult here in this climate to winter full colonies, even when they are in the best of condition in the fall. What prospect have "baby" nuclei of wintering, if full colonies can not be successfully carried through the 6 months' confinement they will have to endure?

My advice is not to adopt any "babyish" fixtures to use in keeping bees, if you wish to succeed. Not one of our successful bee-keepers has ever adopted anything of the kind. They all use standard and practical equipment in their apiaries.

No man can succeed in anything by spending his time fussing with fussy and unnecessary things. Follow Nature's methods as near as possible. Lots of things can be done with bees, and one can get any amount of pleasure in them, but they are not practical nor profitable. Essex Co., Mass.



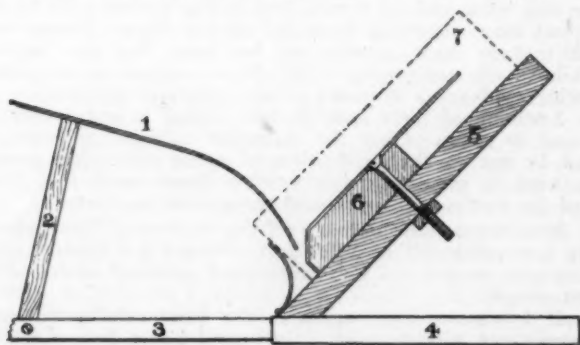
Dewey Foundationer—An Adjustable Machine for Securing Foundation in Sections

BY E. H. DEWEY.

THIS foundation-fastening machine is box-shaped, with the cover, which is about one-half its length, depressed between the sides; a table sliding on the same is drawn to the rear by a spring attached to the side of the machine.

The forward edge of the machine is beveled. A support is attached to the forward edge of the table at such an angle as to permit the operator to have his work under observation constantly.

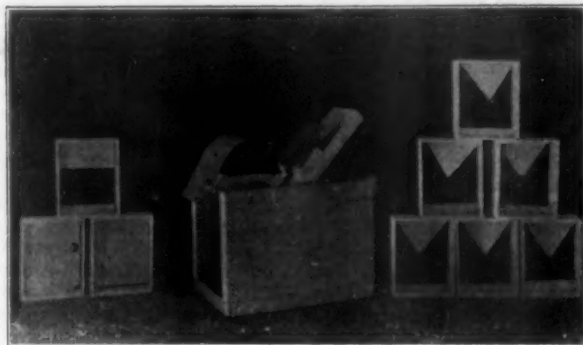
A gauge, mounted by an iron plate, is secured to the support by bolts. The gauge and plate automatically center the



starters, and if sections of more than one width are used the machine is adjusted by loosening the bolts and slipping between the support and the gauge a wedge of the desired thickness. The button, which acts as a check to the movable plate, is turned when the machine is adjusted, to permit the plate to stop at the desired spot.

It will be noticed that the upper forward edge of the gauge is cut away and the stationary plate projects over the upper edge, but not quite flush with its base.

A curved yielding spring is attached to the beveled edge



of the table to hold the section securely against the base of the gauge.

Two rods extend in a horizontal position from the forward end of the table to the plate supports. The plate supports are reciprocated on bolts that pass through the sides of the machine and the supports.

The curved plate is secured to the supports.

Two creases that meet at the center and rear of the curved plate collect and convey the melted wax away from the machine at one point.

The section is slipped over the gauge and is held in position by means of the spring on the forward edge of the table. The stationary plate is about 3-16 of an inch from the section. When the plate is well heated the thumb of the right hand is placed on the rear edge of the table with the forefinger extended on the upper side of the machine. The table is now pushed forward, by the thumb, until the curved plate, after passing over the edge of the section, comes to rest. The starter is now slid down the stationary plate until it comes in contact with the heated plate, when the table is released and the starter is pushed to the section to which it is securely fastened.

The instant the cable is released the curved plate is automatically withdrawn from the section, and any adhering wax is carried away from the section and the working parts of the machine.

A screw prevents the table from being carried completely over when the table is released.

Full sheets may be secured as readily as starters, and both if desired.

Attention is particularly called to the position of the curved plate with reference to the section when the machine is closed. In its passage the curved plate does not come in contact with the section at any point. No dripping wax can soil the section or the machine.

The beveled edge of the gauge permits the heated plate to pass beneath the stationary plate without touching any part of the machine.

Sections are supplied with starters as fast as they can be picked up, and come from the machine absolutely free from dripping wax or smoky deposit from the lamp.

The machine is the only one of the kind ever supplied with a curved reciprocating plate; in fact, it is constructed on entirely new lines, and has stood the severest tests satisfactorily.

Berkshire Co., Mass.

[This is one of the things that is all right if it does all that is claimed for it. We understand that a patent was applied for, and that it was to have been put on the market this season. But we do not recall seeing it advertised in any of the bee-papers.—EDITOR.]

Amerikanische Bienenzucht, by Hans Buschbauer, is a bee-keeper's hand-book of 138 pages, which is just what our German friends will want. It is fully illustrated, and neatly bound in cloth. Price, postpaid, \$1.00; or with the American Bee Journal one year—both for \$1.75. Address all orders to this office.

American Bee Journal



NATIONAL AT CHICAGO

Report of the 36th Annual Convention of the National Bee-Keepers' Association, held in Chicago, Ill., Dec. 19, 20 and 21, 1905

The National Bee-Keepers' Association held its Annual Convention in Brunt Hall in the Bush Temple of Music, Chicago, Ill., on Tuesday, Wednesday and Thursday, December 19, 20 and 21, 1905.

The opening session took place on Tuesday, December 19, at 7:30 o'clock p. m.; the President-elect, Mr. C. P. Dadant, of Hamilton, Ill., occupied the chair.

The Secretary, Mr. W. Z. Hutchinson, read a paper written by Mr. L. Stachelhausen, of Converse, Texas, on

THE CONTROL OF INCREASE

The natural way of increase is swarming, and, therefore, the first problem is control of swarming, and this is very important for bee-keepers who keep a large number of colonies in several apiaries. As we have no man in the out-yards to watch for swarms, and as it would not pay at all to keep such a person there during swarming-time, every swarm cast by any colony would be very probably lost.

I am tempted to give you a scientific talk about the cause of swarming, but I think you prefer more practical hints. We know a number of ways to prevent swarming; one of the most practical ways to prevent, or, at least, to delay swarming, is to use large hives; that is, a large comb-surface, by which the bees can extend the brood-nest in every direction. At the same time colonies in such large hives will develop faster during the spring, and become stronger colonies. We can force such a development in smaller hives by spreading the brood and other laborious and dangerous manipulations. In a large hive with plenty of honey a healthy colony will develop to the greatest possible strength without any manipulation made by the bee-keeper.

It may be said that such large hives do not always, and under all circumstances, prevent swarming. This is true, but I have observed, if, in an apiary, 10-frame Langstroth hives are changed to larger ones, the bees will swarm less by and by every year. In my locality the bees from hives not larger than 8 or 10 Langstroth frames will swarm so much that one man could hardly manage an apiary of 100 colonies. I could tell you stories about the ways some of my bee-keeping neighbors acted to get rid of these surplus swarms. For about 24 years I have used larger hives, and have no trouble of this kind any more. This is a very important difference, if bees shall be kept in as many colonies to make a profit-bearing business.

In my locality the problem is to keep the bees from swarming till the main honey-flow commences. During this flow the bees will not swarm, if they have not made preparations for it before this flow commenced. With such circumstances, hives as large as the Dadant hive will prevent swarming sufficiently in most years. In other years, which are more favorable for brood-rearing, I have to watch my colonies more carefully. If I find a very strong colony with brood much extended, I have to manipulate it, especially if I find queen-cells started. It may be set down as a rule, if we find 2500 square inches of comb-surface occupied by brood, this colony will probably swarm soon, even from a very large hive.

The prevention of swarming may have different purposes. If we can't, or are not willing, to watch our colonies during swarming-time, we can make the swarms artificially a little earlier; thus they would swarm naturally, but in this case we will get as much, or even more, increase. If

we want less increase, we make only so many artificial swarms as we think necessary to prevent natural swarms. Or we may not want any increase at all, and wish to keep the whole force of a colony together and have it as strong as possible during the honey-flow. For this reason we have to select different ways for prevention of swarming. If we make swarms artificially, we can make one or more swarms from every colony strong enough, or we make one swarm from two such colonies, or we take the material to form a new swarm from a larger number of colonies. All this is done for a permanent increase. A second way is, when no increase is wanted, to divide a strong colony for some days only, and when the swarming fever has past, we unite these two colonies again. A third way is to manipulate the colony in such a way without dividing it, that it will not or can't swarm. We will consider these three ways.

There are, again, many different ways of artificial swarming. During many years I used the well-known plan to make three out of two. A strong colony, A, is shaken into a new hive with starters or full sheets of foundation, and this hive is set on the old stand of A. The brood-combs without bees are placed in another hive, and this is set on the stand of another strong colony B, and the colony B receives a new stand C. To the colony now at B a queen fertilized, or virgin, or even a queen-cell, is introduced. If the honey-flow is good and of long duration this plan can be used with profit, but the colony at B is in a bad condition for some days, having no young bees to feed the larvæ, a part of them may starve and be drawn out afterwards. The colony C has lost all the field-bees, and if the hive does not contain very thin, watery honey, the young bees can't prepare the necessary larval-food, and some of the young brood is lost again, except we give some water to this colony in some way till some of the young bees will fly out to gather this water outside.

Since a few years I prefer for these reasons, another plan, especially recommendable if we want very little increase. I take from a colony, which I expect would make preparation to swarm, 3 or 4 brood-combs (3 of my frames have not quite as much comb-surface as 2 Langstroth frames). The bees from these combs are shaken back into their hive. In place of these brood-combs empty combs or frames with full sheets of foundation are given to this colony. Eight of these brood-combs from different colonies are set in another story, and 2 empty combs added; this story is set on top of another strong colony over a queen-excluding honey-board. In this way I go through the yard till all the colonies strong enough are managed. In about 2 or 3 hours these brood-combs over the excluders will be covered with young bees, and now I remove them again. Two such stories with brood and bees from 2 different colonies will form a new colony, which is placed on a new stand, a queen in a cage closed with candy is introduced, and at the beginning of the honey-flow one or more supers are given to this colony and this bee-yard is safe for 10 days, at least.

The advantage of this plan is, that the colonies are weakened not more than necessary to prevent swarming, and the new colonies are at once ready to store honey. Hereby, it is important that we take mostly capped brood from the colonies, and that we give the frames of foundation at the proper place. Our purpose is that this foundation should be drawn out and eggs laid in these cells at once by the queen, therefore they must be given at such a place, where the queen is laying eggs in the center of the comb, or will soon do so. If we have taken away combs, in which some young bees are gnawing out of the cells, just in the center of these combs, we can put the foundation right in their place, because in a few days the queen would lay eggs there anyhow. If this cannot be done, a safe way is to remove the remaining brood in the old colony close together, and to give the foundation on both sides of the brood-nest between the last brood-comb and that comb containing mostly pollen, which generally is found on both sides of the brood-nest. If this is not observed, and we examine the colony 10 days later, we may find these combs filled with honey instead of with brood, and this will be a hindrance for the queen all the summer through. Many other ways of artificial swarming can be used, too many to be mentioned here.

The second way to prevent swarming is to divide a colony, which will probably swarm very soon, or has already

American Bee Journal

started queen-cells, for a few days only, and to have that part of the colony which receives the brood-combs with the queen-cells weakened so much in bees, that these surplus queen-cells are destroyed by the bees themselves. As soon as this is done both colonies are united again. This can be done in different ways.

1. The old colony is removed from its stand and a new hive containing some empty combs and some frames with starters is set on its place. From the old colony is taken 1 brood-comb with 1 or more queen cells and placed between 2 empty combs in the new hive on the old stand. By shaking or brushing, more bees from the old colony are added to this swarm, being careful not to get the queen in with the bees. The supers are given to this swarm on the old stand, and the parent colony, having the old queen, is set to one side or on top of this swarm. By this manipulation the parent colony is weakened so much that it gives up all swarming and will destroy the queen-cells. This generally takes place in less than 6 days, and now both colonies are re-united. The queen-cells on this 1 frame of brood are cut out, the brood-comb set back into the old colony, the new hive is removed and the parent colony set back on the old stand. This plan was lately recommended in the United States and called "the Sibbald plan."

2. Another way of this kind is known as the "shook-swarm system." From a strong colony nearly all of the bees with the old queen are shaken or brushed into a new hive with starters or foundation, and this is set on the old stand. The old hive with the brood-combs and a sufficient number of bees to cover and nurse the brood is set to one side of the swarm. For reuniting we wait till the brood has



L. STACHELHAUSEN.

hatched from the old brood-combs and unite the young bees with the swarm by setting the old colony to the other side of the swarm 10 days later. In 10 or 11 days afterwards all the brood of the old colony will have hatched and now we shake all the bees from this colony in front of the swarm.

When we make the shaken swarm we can give one or two brood-combs or none at all; we can give to the swarm empty combs, full sheets of foundation or starters only; all this depends on circumstances. I used this shook-swarm system for producing section-honey and I will tell you how I planned it out. My experience was, that I could not get a satisfactory crop of section-honey, if I had given the section-supers to an old colony in a 10-frame Langstroth, or a still larger hive.

About 18 years ago W. Z. Hutchinson recommended in a little book, "The Production of Comb Honey," for this purpose the use of swarms which were hived in a contracted brood-chamber containing starters only. Since then I have used swarms only for the production of section-honey, and worked all the other colonies for extracted honey. Using large brood-nests I got less swarms every year and made them artificially by shaking the bees off from the combs,

manipulating these swarms exactly as recommended in this little book. Such shaken swarms always worked just as well as natural swarms—even better, as they were generally stronger.

The only disadvantage of these natural or shaken swarms is, that they are getting weaker every day during the first 3 weeks, and more bees are necessary by and by for nursing the increasing brood. To avoid this I used Heddon's plan for preventing after-swarms, by changing the place of the parent colony and so drawing some bees from it to the swarm every 8 or 10 days. It does not change the principle, if this drawing of bees from one colony to the other is performed in some other way.

Some bee-keepers claim that shaken swarms should not be made, except a colony has started queen-cells. This is not so, if a large brood-chamber is used, but it is necessary that the colony be as strong as possible and have many young bees. The starting of queen-cells is a sign that a surplus of young bees compared with the open brood is present in a colony; in a large hive so much brood may be present, that no such surplus of young bees may appear, nevertheless more of them will be in the hive than in another, smaller hive, which has queen-cells. When the shaken swarm is made, this open brood is removed, and we have exactly the same condition as with a natural swarm.

Further, in criticising this plan it is said, that the swarm has to build a new brood-nest, which causes a larger consumption of honey, which honey would better be stored in the sections. But such swarms work with more vigor than a colony which is nearly in a condition to make preparations to swarm; as no combs are in the contracted brood-chamber all the honey gathered is forced into the sections, which contain full sheets of foundation, and some of them partly drawn out. These circumstances overbalance the necessary building of new combs.

In my opinion, the most satisfactory way of producing section honey is to use large brood-chambers in the spring, and when the main honey-flow commences the colonies are managed after this shook-swarm system. This is especially true, if all natural swarms must be avoided.

3. This building of new combs can be avoided in the following way: A shaken swarm is made on the old stand, with the old queen, and the parent colony is set to one side or on top of this swarm. As soon as one of the young queens has hatched and has destroyed the other queen-cells in the parent colony, both colonies are reunited. If the old queen shall be kept, it is not necessary to hunt up the young queen in the parent colony. At evening, before the bees cease to fly, we exchange the places of the two colonies for about an hour, and any field-bees from the swarm will enter the parent colony; now the hives change places again, when the bees are not flying any more. These field-bees are used to an old queen, and will, during the night, kill the young virgin queen. The next morning both colonies are united again. If the young queen shall be kept and the old one removed, the best way would be to wait till the young queen is fertilized, then the old queen is found, removed, and both colonies united.

In this way no new brood-nest is to be built, and the colony is divided during a few days only, the swarming impulse is removed, and the bees themselves have destroyed the queen-cells; but the plan will hardly work for section honey, and the same I think can be said about the Sibbald plan. In both cases the brood-nest, after reuniting, will contain too many empty cells, which will at once be filled with honey.

Now we have to consider the third way of preventing swarms by preparing the colony in such a way, that it will not or can't swarm.

Here may be mentioned the different plans, by which the queen is prevented from swarming out, in a mechanical way, as by the use of a queen-excluding honey-board or a queen-trap, or by caging the queen for some time. These plans are quite against the nature of the bees, and have generally proven unsatisfactory. We can remove the old queen entirely and allow the colony to rear a young one. This plan will prevent swarming, if at the right time the surplus queen-cells are destroyed, but the colony is weakened considerably, probably more so than if a prime swarm and no after-swarm were allowed. The plan takes too much work and attention to be practical in a large apiary.

Another way of this kind has been known for some time, but is not mentioned very often. When queen-cells

American Bee Journal

are reared in an upper story, over an excluder, it was observed that such colonies did not swarm as long as there is some brood in this upper story. If this is true, it is plain that swarming can be prevented, if once in a while some brood-combs are removed from the lower story to the upper one over this excluder. This idea can be used for section honey, if a divisible brood-chamber is used. When the honey-flow commences, the upper part of this brood-chamber is removed, a queen-excluder laid on top of the lower part, over this one or more section supers and on top of them the upper part of the brood-chamber. The upper brood-story is kept on the hive till all the brood has hatched and the combs are filled with honey, then these combs are extracted or used for winter food in the same or another hive.

Against this plan I have only this objection, that the queen-excluder is a considerable hindrance for the bees, but I think in many cases, when section honey shall be produced, it can be dispensed with, as the section-supers themselves have probably the same effect as the queen-excluder.

Another plan is described by Dr. C. C. Miller, and called the "foundation plan." When in a colony queen-cells are found with eggs in them, these eggs are destroyed; if, 10 days later, larvæ are found in queen-cells, the queen is found and caged and all the queen-cells destroyed, the hive removed and in its place is put a hive containing three frames of foundation. Upon this hive is put an excluder and over the excluder the old hive, with brood and bees, and over this the supers. The queen is run in at the entrance of the lower hive and the colony is left for a week or 10 days. At the end of this time the lower story is taken away with the excluder, and the queen is put back in the old hive, which gets the old stand.

This is a modification of the last-described plan. I have never tried this plan, but it seems to me, that in some localities, the colony may swarm after treatment, and that the examination of all colonies every 8 or 10 days to destroy the eggs in queen-cells or to treat the colony, if larvæ are present, will take too much time and labor.

Another way belonging to this class is "Simmins' non-swarming system." It is said that the bees will not swarm, if an empty space is given to them between the brood-nest and the alighting hole, in which the bees can build combs. Simmins says that an important item in this management consists in supplying every section with fully worked combs. As this is hardly possible in a large apiary worked exclusively for comb honey, this may be the reason that the plan was not favorably accepted on this side of the Atlantic. You will see that this principle is partially employed in Dr. Miller's foundation plan.

L. STACHELHAUSEN.

The President declared the paper open for discussion. Mr. McEvoy—One point in the paper read was as to shaking bees onto comb. Some people complain that these colonies would grow weak in a few days after, but my plan is to put a cone bee-escape across the front after 5 or 6 days for a few hours; the bees come out and they cannot get back into it again. Then you can send your bees where you want to. Another point is that the queen destroys the young queens because the guards are off the cells. The first queen that hatches will do it.

Mr. Holtermann—I think that the subject that we have here tonight is one of the most important subjects that is going to be brought before the convention, that is, the control of increase. We have had different methods given to us. The paper I think is a very good one and very exhaustive. I think that there is a method which can be given in addition to what has been here. Some 4 or 5 years ago I began bee-keeping again, and the writings of the Dadants had made quite an impression upon me, for I always looked upon them as very successful bee-keepers, and good, sound reasoners; and their observations led me to adopt a larger hive. I had been a strong advocate of the 8-frame Langstroth hive up to that time, and I adopted a 12-frame Langstroth hive. What Mr. Stachelhausen says is correct. I think the basis or the beginning of the successful control of increase is large colonies. Now, there are several features which come into play in the control of increase. First of all, the general impression is that the time to note the swarming impulse is when eggs are deposited in the queen-cell cups. I think in that practice we make a mistake. I think the first indication towards swarming is the drone-brood; but we will let that alone because in a great many cases they may not swarm at all. But the next is when cell-cups are built. I have had men say to me,

"I see cell-cups built in many cases and no swarming." That is true. The conditions may change, and so on, so that they will not swarm when cell-cups are built, but that is the very reason why we should note that. In my manipulation in the apiary when I see cell-cups built I take it as a hint that the bees are drifting very closely towards swarming, and that is the time, in my estimation, that the brood should be taken out, if at all, unless you are approaching, as far as you can tell, the close of the honey season, and then you do not need to do that.

The next point I find, and I think where bee-keepers make such very great mistakes, is in the amount of super-room given to the bees. I don't know how it is over here, perhaps, as fully as it is in Canada. But the general method is to give an extracting super to a colony of bees. I am satisfied as long as we think we can run our bees successfully with only one super, so long we will not make the most out of our bees, or succeed in keeping down swarming to the greatest extent. No one should think of taking extracted honey without having at least an average of 2 supers to the hive.

Then there is the matter of ventilation. I would like to take you into a frame building on a hot summer day with a $\frac{3}{8}$ -inch board roof, and very little ventilation, and put you at work extracting; and yet there are nine-tenths of the bee-keepers who consider it economy to have half that, and have no more protection than that $\frac{3}{8}$ -inch board; and they have what is equal to a stove in addition in that building in the young bees and brood in the hive. I consider it a very gross extravagance to use a hive with as little as a $\frac{3}{8}$ -inch board protection. We should protect them more.

Next, in order to keep down swarming I am going to try to show you the importance of ventilators in the supers. You have a colony of bees there, and all the fresh air they can get has to come through that brood-chamber and up into the super; by the time it reaches the super that air is foul, and your bees on that account become discontented and want to swarm, and therefore I use the system of ventilation with supers. A great many of the entrances to hives are too small. In our country we have hives in which the entrance does not go all the way across the front of the hive. I learned a lesson from Mr. S. T. Pettit, to enlarge the entrance of the hive during the warm season by means of wedges $\frac{3}{8}$ of an inch at the front and going to a point at the back, and as soon as the swarming-time comes on slide one between the bottom-board and the brood-chamber, and in that way increase the entrances $\frac{3}{8}$ of an inch. By those methods we can keep down swarming to a great extent. In using the greater amount of super-room, you want to get the condition where you have sufficient super-room in your hive that the worker force in that hive is contented, and in such numbers that the bees that are dying off from day to day are about equal to the number of bees that are coming on. You can't do that unless you have the extra amount of super-room.

The reason why I have said I consider this perhaps the most important subject that will come before this convention is this: I am thoroughly satisfied that the secret of large yields of honey is to keep the bees together. No matter whether your honey-flow is short or long, it makes no difference so far as I can see it as to that point. Your bees then are always ready; your bees come with large forces, and they can take advantage of everything that may turn up, no matter whether it is clover, basswood or buckwheat—whatever gives you the largest amount of yield.

As far as fall flows are concerned, I know by observation that a great many do not get the amount of honey they could in the fall of the year, because by that time their colonies are so broken up they really have few, if any, strong colonies left.

Dr. Miller—When you speak of ventilating supers, do you mean extracting supers, or sections, or both?

Mr. Holtermann—I have particular reference to extracting supers. The only method I can see of ventilating the comb-honey supers is by having a ventilator at the top of the brood-chamber. I don't think it is practicable to use them in comb-honey supers at the time when the bees are capping the honey.

Mr. Nau—I work the super in the same way Mr. Holtermann does, and I have no swarms. I have a 13-frame Langstroth hive, and whenever one super is half full I put another under it. I get as high as 6 supers full of honey off one hive.

Dr. Miller—I would like to emphasize the point that is

American Bee Journal

made by Mr. Holtermann, and that is as to the importance of ventilation. I have had from year to year what I call "piles," that is, piling them up 3 or 4 stories high, and allowing each colony to have an abundance of ventilation; in other words, the full entrance to each story. I never had one of these piles swarm. I wouldn't like to say that will always be a certain preventive of swarming, from the fact that these piles were generally formed from what were rather weak colonies in the first place, and built up gradually to very strong ones. The ventilation of the colony can always be made a success with extracting supers, as Mr. Holtermann says; and I have wondered many a time why men working for extracted honey did not have a current of air running right up through the whole thing. Mr. Holtermann says that by having the air come out through the brood-chamber but not through the supers will work for section honey. A good many years ago, before any such thing as sections were known, I was in the apiary of Adam Grimm, of Wisconsin—he was working at that time for comb honey, and had little boxes upon his hives and over them a telescope cover, and the day I was there, he was raising up these covers and blocking them up a little so that the air could get up through the brood-chamber, and I remember, with his very emphatic German way of saying things, he turned to me and said, "I consider that very important." From that time on for a number of years I had that same kind of ventilation. But I want to tell Mr. Holtermann this, that in the upper part of the story, all of the sections near that will be much slower in completion than the others, and that is the objection to it. I am dreaming some time of having a kind of way of ventilating the super sections right up through the center. In some such way I would like to have the advantage of the ventilation and still hold on to the sections. But in the matter of ventilation when working for extracted honey, I believe you have the key of the whole situation; I don't believe you need have much swarming there at all.

Mr. Holtermann—You know why that is, Dr. Miller?

Dr. Miller—No, I don't.

Mr. Holtermann—The impression I had at one time was that if I made an opening at the top of the hive the air would go in at the front and come out of the top, but the fact of the matter is you will find that the air is drawn in at the top. That air is cool when it first strikes the hive, comparatively, and it has not been raised to the temperature necessary for that evaporation to go on, and therefore in using ventilators in comb-honey supers there is the tendency for the bees not to cap as readily there as in other places, because it does not ripen as rapidly.

Mr. Taylor—Will not bees carry the honey out there, too, as well as not cap?

Mr. Holtermann—There may be a tendency for them to do that because they can't ripen it as well.

Mr. Taylor—The ventilation would help to ripen, if anything, and they would not carry the honey out.

Mr. Holtermann—If the temperature outside is 80 degrees and the hive temperature is nearly 100, the temperature of the air when it first enters the hive has to be raised to the inside temperature by the bees.

Mr. Taylor—That is in the shade. But out in the apiary it is generally as hot outside as it is inside.

Mr. Holtermann—It is night and day.

Mr. Taylor—The reason I have given for that is, that the bees to guard their honey will carry it away from an opening for fear of robbing.

Dr. Bohrer—The question under discussion is not a new one. Mr. R. C. Otis once put this question to me: "Why do bees swarm at all?" The reply was that it is their nature to. It applies to the honey-bee as well as every other department of the animal kingdom—to propagate their species. There are two things that come as near controlling it as anything—one is when there is an abundant flow of honey, provided you give them room. I think the first movable hive I made had 18 frames, and I had one of the largest swarms I ever had come out of that hive. I never had a swarm cast where bees were hived in sugar hogsheads. And I have never seen swarms cast from an old-fashioned salt-barrel, or any receptacle of that kind. Take a large hive and give them abundance of room, and if the honey-flow is abundant they will work at that and not have much swarming, but give them small hives and they begin to give trouble. At the present time I can't think of any plan that will effectually prevent swarming.

Mr. Holtermann—Isn't the reason because they are confined in those hives during the daytime and they are comparatively warm and the ventilation is not proper?

Mr. Taylor—I would like to ask a question of Mr. Holtermann. He spoke of looking for the starting of queen-cell cups. Are there no cups left over from the previous year in your hives?

Mr. Holtermann—There are cups, but I don't think anyone would mistake this year's cups. There is a very distinct difference. If those cups are there, and you expect a honey season ahead of you, that is the time you should deal with the swarming matter. When they begin to put brood and larvæ and eggs in the queen-cells, in my estimation you have gone a step too far to prevent the swarming without a serious breaking up of your colony. To protect your colonies temporarily requires a great deal of labor, and a good many extra hives.

Mr. Baxter—Hunting for cups is too much work for me. I have found by 25 years' experience that there is an absolute rule to prevent swarming, and that rule is to have large hives and see they have room which, without giving any other ventilation, gives them ventilation. But under certain conditions that is not enough. I want ventilation from below—I don't want it from above. It is sufficient if you raise a hive about $\frac{3}{8}$ of an inch above the bottom-board. I have hives, some of which could be raised, and some could not be, and no matter how many supers I put on top of those movable bottoms, when the weather became warm they would swarm anyway; but where I raised the hives from the bottom and gave them sufficient room above I have never had any trouble with swarms; and I have had as many as 250 colonies.

Mr. Holtermann—What is the length of your honey-flow?

Mr. Baxter—It begins about the first of June and ends the middle of July, and occasionally in the last of September or the beginning of October. It is for extracted honey. I wouldn't bother with comb honey; I have tried it long enough.

Dr. Miller—In my locality, working for section honey, raising up the hive will help, but it won't prevent swarming; a whole lot of them will swarm. With reference to this matter of the size of hives, I believe in that general rule, and if I didn't believe in any other wise I would because of the testimony of the men I believe in so thoroughly as I do the Dadants; and yet in my locality that does not work as I would like it to. One year I got 2 of the Jumbo hives, deep frames—10 frames—and deeper than the Langstroth, and I was going to have that, and have nothing else if those things didn't swarm. The next spring after they were filled, the very first colony that swarmed was one of those Jumbos.

Mr. Bohrer—With regard to ventilation, that big salt-barrel had no upward ventilation, but it had lots from below. In addition to Dr. Miller's trouble I had lumbago in handling the same hive.

Mr. Holtermann—What did you put in the supers of those Jumbo hives?

Dr. Miller—The same as I did in the others.

Mr. Holtermann—Drone comb?

Dr. Miller—No, sections with foundation. I am not sure whether they waited until I had the supers on.

Mr. Ferris—There is nothing I have studied more than the question of producing the most brood from the least number of bees I winter, and getting the most honey from them. To keep them entirely from producing any swarms until after the flow is over, I divide them at my will. I use both 10-frame Langstroth and a special hive which holds 14 Langstroth frames, $21\frac{1}{4} \times 21\frac{1}{4}$, and a division-board through the center. This makes a large hive. Provide that through the center with a solid division-board which is removable, place a queen in the fall on each side of that division-board. I winter 2 queens in an ordinary colony of bees in this hive. Then in the spring I work each division up to 7 frames full of brood. Then I add on another story, and as each story has a place for the division-board, I put in a division-board, and in that way I get both sides worked up to an exceedingly strong colony in brood, up to the time when the honey-flow begins. At this point I take away both queens, and let them be a few days queenless, and then either give them a capped queen-cell or a queen already mated. In this way you can prevent swarming, I think, as well as in any other way. An old queen will swarm quicker than a young

American Bee Journal

one, and by following this method you get enormous swarms. I get, with a 10-frame Langstroth, 4 stories full of bees by June 17, and not one of those colonies ever yet cast a swarm. And while others are not getting a pound of surplus in my locality, they yield me 200 pounds of comb or extracted.

I can endorse what has been said about ventilation. You need considerable of it. For extracted honey, upward ventilation with a hole at the back of each side about $\frac{3}{4}$ of an inch is a good thing. It will keep them from clustering on the outside. I had one swarm at one time 5 stories high, and it was crammed full of bees at night so that they had a cluster as big as the size of a hat; there would be half a bushel on the outside. That swarm of bees filled 5 stories full of honey in 7 days, except the brood-nest. Three or four manipulations are practically all that is necessary up to the time of the honey-flow, and yet will entirely control swarming.

Pres. Dadant—In how many colonies did you try this?

Mr. Ferris—I had 25.

Mr. Rice—When you remove the queens and division-boards do you unite them?

Mr. Ferris—Yes. At the end of the flow I supply them with another queen besides the one they have.

Mr. Rice—What do you do with the old queens?

Mr. Ferris—I kill them. I have no use for queens that are over a year old.

Dr. Miller—You consider this practical, uniting two colonies?

Mr. Ferris—Yes. But really you only have one to deal with all the way through.

Mr. Baxter—I would like to be understood on this matter of ventilation. I have holes at the back of my hives also, but then that is simply to ventilate around the super and the top of the super. There is no draught from the lower part of the hive through the hive and out through this hole. I have an oilcloth over it which makes it perfectly tight. If there happens to be a hole in the cloth the bees will not store honey near that hole. You can see from that it is a detriment to have a draught through the supers. But I do believe in having ventilation around and from below.

Mr. Holtermann—I want to say, most emphatically, I have got at least 300 of these ventilators, only I think I have a better way than to bore a hole of that size. I have an opening of about $\frac{3}{8}$ of an inch in depth right across the hive. I have no difficulty whatever in having the bees store honey next to these ventilators.

Pres. Dadant—It is a fact that where there is a hole in the oilcloth, even if there is a straw mat such as we use on top of the frames, there is a slight amount of ventilation there, and the bees put less honey at that spot.

Mr. Ferris—Bees that are queenless will go into the supers quicker than bees that have a queen. That is one reason why I advocate taking away the queens at this period, at the commencement of the honey-flow. You can control swarming at the commencement by giving the queen room to lay. But after the honey-flow commences they will enter the honey-sections more readily if they are queenless for the first 3 or 4 days than they will if they have a queen. I use no more bees to winter than you would winter ordinarily in a 10-frame hive.

Mr. McEvoy—Did I understand this gentleman to say that he uses 14 frames in a brood chamber, and the brood is all in the brood-chamber, and an excluder on?

Mr. Ferris—I always confine the queen below. In our locality we will have all the lower frames filled with pollen. I have seen it time after time; if we allow our queens to run at random through the hive without an excluder, they will store the first story full of pollen; the next will be a brood nest, and the honey on top of all.

Mr. McEvoy—I see by the papers that they all advocate large brood-chambers. I have only a medium-size, and yet I rear more brood than the most of them, because I go in, as a rule, for pretty near 18 frames. I put the queen above, and then I clip off at certain periods, and I leave that brood afterwards, and in 9 days it is capped. I let them swarm and come out with an immense lot of bees. From my point of view I don't want too much super-room, because I can get better ripened honey, and a finer quality, and less swarms.

Mr. Ferris—I get 30 frames of brood instead of 18 by June 15 to June 18.

Mr. McEvoy—I understand you to have had the 14 frames just below?

Mr. Ferris—No, I keep tiering them up until the flow begins; I let the queen have full range until the flow.

Mr. McEvoy—All right. I agree with you. That is the best thing I have heard yet.

Mr. Bartz—It is not advisable to mix the two matters, comb and extracted honey, the way you are doing. They are different matters, and require different treatment. I would like if each method were treated separately. Most bee-keepers can control increase when running for extracted honey, but the difficulty seems to be with comb honey.

Mr. Taylor—The trouble, I think, is that these people who control swarming are producing extracted honey, and those who produce comb honey cannot control swarming. That is the reason they don't discuss it so much.

Mr. Ferris—There is a question I want to ask. Take these supers, no matter what size section we use, and extracting frames, so that you can put an extracting frame all drawn out with nice white comb in it on the outside of each side of the super, and in these large cases put one in the middle. When you put that on, the outside will be filled first instead of the center of the hive, and then the super will be capped more evenly all over. Are there others trying that method in different localities?

Mr. McEvoy—Yes; that will work in all localities.

Mr. Ferris—We know our poorest sections are almost invariably on the outside of the super, and by getting those capped first we produce a small quantity of extracted honey and the bulk of it in comb.

Mr. Jackson—When you have both your queens in the bottom brood-chamber and allow them full range, how do you keep them apart? If your brood-frames drop, can they get together?

Mr. Ferris—My 10-frame hive has a solid partition that goes clear to the bottom, and they meet, so that when I put the one story on top of the other the division-boards sit tight, and I lay a cloth over the top.

Mr. Hatch—I think we are losing sight of one point mentioned here, the influence of drones in casting swarms. In my observation a colony will never cast a swarm unless there are some drones present. Another idea was, we should look for drone-comb as well as queen-cups. I know one of the most successful bee-keepers that uses small hives, 12 inches square and 7 inches deep. He starts in the spring with one section and then puts on another section. He is very careful to have nothing but worker-comb in any of his frames. As the honey season advances he goes and pries the top hive off and he says, "There is some drone-comb; they are preparing for swarming." He scrapes that off and puts an empty section between them, and they are fixed for 10 days; that colony won't swarm. He didn't look for queen-cells.

Swarming is an indication of vigor, and strength, and power. The point is not to stop that, but to turn it in the right direction. Just merely controlling increase is not what we are after. We want to control it in such a way that we shall not lose our honey crop, or diminish it. I have tried a good many ways, and I have never yet found one solitary way that was controlling the increase but what was at the expense of the honey. I have tried the plan of caging the queen on 2 frames and she will sulk, and wear herself to death, and when you release her again it will only be a few days before she will be superseded. I have tried shaking the bees off onto comb, and onto full foundation, but with the same result. I would rather pay a man \$5.00 a day to sit in my apiary and watch for swarms and hive them, than to try any plan of controlling increase that I have discovered yet.

Mr. Holtermann—I very emphatically oppose any method which forces the bees not to swarm. As Mr. Hatch has said, direct their energies in the direction of producing honey.

Mr. Hatch—Do you think it is possible for a colony to swarm without any drones being present in the hive?

Mr. Bratz—I have had them swarm without.

Mr. Holtermann—I don't think that any man is in a position to say that there is actually not a drone present in the hive.

Mr. Hershiser—I have had bees swarm quite frequently without drones when I set them out in the spring.

Mr. Aspinwall—I received a challenge from Mr. Taylor just now, that we hadn't heard from the comb-honey man. But as I am set down for a talk on the non-swarming hive I thought it best not to say anything. I am working on a

American Bee Journal

different line. I agree with Mr. Holtermann in respect to the queen-cells, rudimentary ones that are new in the spring—the old ones are cut down. In the matter of drones I have tried with artificial comb, and that factor is one that produces swarms, but there are a great many factors that enter into and constitute the swarming impulse. If we remove one of them, that is a help; but in an apiary of a number of colonies drones will intermingle quite frequently, and for that reason drone-comb is a troublesome expense.

When you come to size it up there has been quite a conglomeration here. What is the young bee-keeper to do when he leaves this session? Next season will he adopt any of these plans, and can you guarantee him success? We want a hive, or we want a system, that will control swarming during the production of comb honey, and then we have got it without doubt for the extracted, and that is the point at which I am laboring. Dr. Miller has been for years working on a non-swarming system in producing comb honey. That is what we are after. We must not have manipulation that will tamper with the natural workings of the colony. So sure as we remove the queen, so sure as we cut the queen-cells out, so sure as we divide, we are placing the colony in an abnormal condition. Isn't that right, Dr. Miller?

Dr. Miller—Not fully.

Mr. Aspinwall—You have placed them in a desperate condition. The removal of the queen does not necessarily compel them to make as many queen-cells as when you have thwarted the swarming by removing the cells only.

There is another point in regard to controlling swarming that has been mentioned here, and that is in reference to the numerous methods set forth in the paper. No one of those methods prevents swarming to the fullest extent. It controls the evil or bane of bee-keeping to a certain extent only. As the writer admitted, there was no one system that could be wholly relied upon. You will pardon me for taking the stand that it must be done mechanically, as well as by the system adopted in connection with it. I know the bee-keeping world is working on another plan, and decries the principle of a hive that will control swarming. I recollect very well in the days of Quinby, Mr. Hazen, who experimented quite largely, lived in my neighborhood. Professor Cook refers to him as making an effort to control swarming by a non-swarming hive, and he offered such a hive to Mr. Quinby with whom I was well acquainted.

The matter of giving sufficient room is another factor, and that is what Mr. Hazen did, simply giving surplus room on all sides and the top, the hive in other respects remaining the same. I don't care how much room you give a colony so long as there are 6 to 14 combs, as the case may be; the bees may make rapid increase with a fertile queen or otherwise; when those combs are filled any outside appliances for room will not compel them to leave that brood-nest, until they are compelled to by the honey-flow. During that time the brood-nest is overcrowded, and the result, in many instances, no matter what the room is, such a season as last season, notably in my location, would be to have a great number of swarms. In my locality the impulse was something enormous, one-third of my queens being mated with black drones last season.

Dr. Miller—As to cutting off the cells, there was a time when I most thoroughly believed the cutting of cells didn't have any effect at all. Now actual practice and trial have made me change my views, until I know that in many cases the destruction of cells will stop the swarming. Sometimes it would be just the destruction of cells once in the season, and sometimes the second time would do it, other times not. There are so many exceptions to that case, and all I cared for was to have the actual truth known about it. Here will be 50 colonies and in all of them the cells will be destroyed; perhaps in 10 of them there will be no swarming, and perhaps in 40 of them there will be.

At this stage Mr. Aspinwall was requested to address the Convention on the subject of

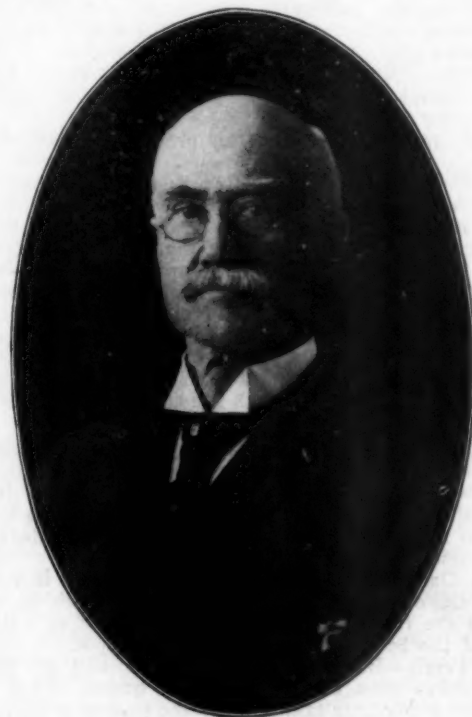
WHAT HAVE WE TO HOPE FOR FROM THE NON-SWARMING HIVE?

Mr. Aspinwall—I am much obliged to Dr. Miller for bringing this matter up. Perhaps if he will look over the past and present he will see that other factors help out in this matter. The matter of drone-cells; the matter of hive-room and ventilation; all these are factors that enter into the control of increase. When I looked over the past and re-

ferred to Quinby's work of 1852, there was such an enthusiasm in reference to the increase of bees that Mr. Quinby said that the season had prospects, or something of that kind, or charms that the different beholders could never realize.

Mr. Langstroth said it was one of the most beautiful sights in the whole compass of rural economy. People were looking for swarms then. We are not today; it is the bane of bee-keeping. I doubt if there are half a dozen in this room who are keeping many bees, but have gone home at night thoroughly worn out with the swarming of the day.

I will merely say that the matter of controlling on my part is more with the hive than with manipulation. I tried these various methods some years ago. To show that there is a prospect of a non-swarming hive, I have been at work 18 years upon it, but many in the audience know I am an experimenter on potato machinery; I have been at it ever since I was 19 years of age, and the first invention required 21 years to produce. That is the potato planter that is used almost universally in the United States and abroad to-day



L. A. ASPINWALL.

So that the hidden things in nature are the things that come very slowly to us.

In the matter of the non-swarming hive the question of room is one important thing, and while I will not give you the details of the hive fully, because of other patents that are to be applied for within a very short time, I will say that I use slatted frames inserted between the regular combs of brood, using usually 7 to a hive, sometimes 6, sometimes 5. Seven is about the best number, as I have already experimented with numbers from 5 to 8 or 10. My hive is made to hold 15 frames. In the month of May during apple-bloom, or rather during the bloom of the sugar maple and willow, the 7 combs upon which the colony is wintered are extended by adding one at a time, or 2, according to the strength of the colony. By the time apple-bloom is through, many of my colonies have 12 frames, most of which are filled with brood. Some times I have colonies that will fill nearly 14. Of course, my hives are packed so as to winter in the open air. This packing is left on until perhaps the end of the apple-bloom, sometimes earlier, according to the temperature. The tray is left on the last. Just at the opening of the main honey-flow these slatted frames are placed at once between and outside of the 7 combs, speaking for the large number I use now. That gives an outside ventilating space and standing room for the bees as well as inside. It is very important we keep the outside cool, where the sun strikes, by an intervening

American Bee Journal

space. My sections are supplied with slatted separators the same as below. So I spread out over 15 combs—these include the 7 and 8 slatted frame—9 rows of sections. The bees are entirely devoid of the swarming impulse under this spreading condition. We all know that the cause of swarming is the *bees*. If we have a weak colony that does not cover the combs, it will not swarm. If we reduce that condition at the start we have deferred the swarming impulse somewhat. Then putting on 36 sections, when they are well started in that raise that super and put 36 more under, and we have 72 sections; and I have found by experimenting with lesser and greater number that 72 sections is necessary for a colony of 50,000 bees in order to prevent swarming. Now, you see we have made the placing of sections upon this hive compulsory to overcome swarming. I use full sheets of foundation. Should I stop one week in the honey-flow there would be one factor present itself, and would not prevent swarming, and that is the clogging of the hive with honey. There would not be sufficient room to give employment for all the comb-builders.

Many of you are aware perhaps that in the economy of the hive at a certain age the bees take to the fields. If there is an insufficient number of workers, the younger ones will leave for the fields perhaps a few days sooner than their natural time for leaving the hive. I know from experimenting that many young bees are drawn out of the hive at 12 and 13 days old, simply because we have forced the bees in that direction.

Now, the paper that was read was by the writer of an article in the Review in November, and he treated the subject of controlling increase largely by the feeding of the larval food. I think he has gone into it a little blindly, with all due respect to him, because the bees adapt themselves largely to circumstances in reference to working either for comb or extracted honey.

Now I have given in brief the outline of my system of working. I will leave the matter, and any questions that may be asked I will be very pleased to answer.

Mr. Bartz—Do you use a queen-excluder between your super and brood nest?

Mr. Aspinwall—No, I do not.

Mr. Bartz—Does the queen keep the combs supplied with eggs sufficiently during the time you use those slatted frames?

Mr. Aspinwall—She does.

Mr. Bartz—So that the brood-rearing does not increase with the use of the slatted frames?

Mr. Aspinwall—No, nor is there chilling of the brood. I have produced, from 35 colonies, this year an average of 128 sections filled with honey, and not one cell with brood.

Mr. Pettit—What was the thickness of those slatted frames?

Mr. Aspinwall— $\frac{3}{4}$ of an inch in the super; $1\frac{1}{2}$ inches in the lower compartment.

Pres. Dadant—For how many years have you tried this method?

Mr. Aspinwall—I have been trying it about 10 years, but it has been subject to many modifications.

Pres. Dadant—How long have you tried it on that many hives?

Mr. Aspinwall—My experiments have been on between 40 and 45 hives every year for 10 years, and this year the radical change of making all new hives took place. Next year it will be all new hives again, like those that proved to be the best last season.

Pres. Dadant—How many combs do you winter on?

Mr. Aspinwall—7.

Mr. Whitney—Do you extend them laterally?

Mr. Aspinwall—Yes. I am satisfied that the drones that are produced in the section-boxes, and even the extending of the brood-nest in the center, as I have known them where they have been crowded, is due to the crowded condition below; the queen can't possibly fulfill her duties. If you will examine colonies that have swarmed you will find in many instances patches of comb without an egg in. This is exceptional, however. That is because the queen has been crowded. She is then in the condition of the old queen that fails to fulfill her function in this respect, and the bees immediately by the condition of things start queen-cells.

Dr. Bohrer—Does your experience teach you that is the universal or general rule?

Mr. Aspinwall—I think it is universal. I have tried it on

that many colonies for so many years, and found it invariably true in my yard.

Mr. Wilcox—You made the statement that you average 128 sections per colony. Is the honey-flow continuous from willow bloom to clover bloom?

Mr. Aspinwall—The willow bloom was very short this season, followed by half that number of days until apple bloom.

Mr. Wilcox—How long is that?

Mr. Aspinwall—We had clover about June 15 in our locality this year, and it lasted till July 23. I have no honey after that to speak of.

Mr. McEvoy—Did you feed any in that gap?

Mr. Aspinwall—No.

Mr. Wilcox—Did you feed, and how much, from the time the apple-bloom ceased until the clover-bloom began?

Mr. Aspinwall—I did not feed one ounce in the spring. My feeding is done in the autumn, and nothing after that, for the last 15 years.

Mr. Wilcox—It is possible in your locality if you had apple-bloom that the bees store so much that it would carry them over that period, but it never is so in my locality. They would need feeding during that period, for the queen would stop laying, and they would begin to decline in numbers.

Mr. Aspinwall—That is true. I watch them, and those colonies that have the most I will interchange combs with sometimes. But I did not do it this year.

Mr. Ferris—Tampering with the queens will injure the colonies. I took 25 colonies and put them in a row; one row was made queenless and the next not so, but I found those that were made queenless for 10 days stored more honey than those that had the queen. This proves that taking away queens does not lessen the amount of honey. Those that have no queens will store just as much honey as those that have queens in the hive.

Mr. Holtermann—How long is your honey-flow?

Mr. Ferris—About the same as Mr. Aspinwall's.

SECOND DAY—MORNING SESSION.

At 9:30 a. m. Pres. Dadant called the convention to order, and called for the presentation of resolutions.

Dr. Bohrer moved, duly seconded, that a committee of 3 be appointed to examine the exhibits and report upon them. Carried.

Dr. Bohrer suggested that the chair appoint a committee of three on resolutions. The suggestion was accepted by the convention.

Mr. Holekamp moved, seconded by Dr. Bohrer, that a committee be appointed to consider suggestions that might be made as to changes in the constitution and amendments thereto. Carried.

The Secretary read a paper by E. D. Townsend, of Remus, Mich., on

HOW MANY BEES SHALL A MAN KEEP?

This is a broad subject, and I do not suppose that any two in this room would answer the question anywhere nearly alike. As the writer is a specialist, with bee-yards located in Isabella, Mecosta, and Kalkaska Counties, Michigan, where a hundred colonies is about all that it will pay to keep in one location, and where large numbers of bees have to be kept in small yards in some cases, as in our Kalkaska County yards, quite a distance from home, this paper will be from a specialist's standpoint.

I think we will all agree that a larger number of bees can be kept more profitably in a location that will support several hundred colonies in a single locality, than if they had to be scattered out 100 in a place, as most locations in Michigan compel one to do.

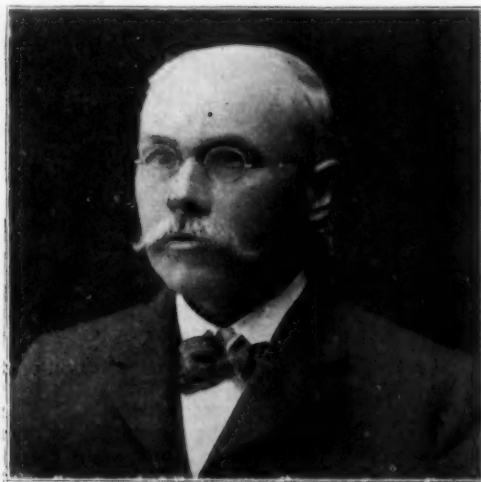
Now just a word about the man: The writer will expect that he has made a financial success with at least one yard, and has learned short cuts, so that when he gets his honey ready for the market he can take his pencil and figure out all his expenses, so that if he had hired the work all done there would be a profit of, say, \$300 or \$400 from the one yard, for you will see at a glance that quite a percentage of the additional yards one adds will have to be managed with hired help; for it will be folly to think of more yards until one could make a financial success with one.

Now we will suppose our prospective experimentalist is

American Bee Journal

a suitable person. I would have him add yards just as fast as his experience will admit. I do not think there are many in the business who would be capable of adding more than one yard each year, while many would better not try to add more than one every other year, until the necessary experience is attained in managing out-yards; then this can be kept up until the desired number is reached. The writer's practice is to establish about 3 yards near home, then go to another location where the pasturage is of an entirely different nature, and establish more yards, so that if one locality should fail to produce he will be quite likely to get a crop in the other locality. This puts the business on a sound basis. To be sure, the honey produced in the yards some distance from home costs a little more to produce, but the assurance of having a crop in one or the other location every year amply pays for the little extra expense in railroad fares, etc.

Then there is another point of importance, and that is, if you like you can keep bees with a profit anywhere in Michigan, so that if one is located where the territory is occupied, all he will have to do is to take a train and go where there is unoccupied territory, and establish yards in this way. One does not have to change his place of resi-



E. D. TOWNSEND.

dence for the sake of keeping more bees. The writer has kept a yard of bees of less than 100 colonies 50 miles from home for 2 years with only 8 visits during the 2 years, and harvested \$1,200 worth of honey during that time, and at present has 200 colonies in Kalkaska County, 105 miles from home, that have been worked successfully for the past 2 years, so what I write is from a practical bee-keeper's standpoint.

In the above I admit I have wandered somewhat from the main subject, and will excuse myself by saying that I am going to tell you how many bees I shall keep under the conditions named above, for you will understand that under some other conditions one might keep more or less bees as circumstances would admit, and now for the number of colonies I shall keep.

Here at Remus, where white clover and fall pasturage is the source of our honey crop, we have 3 yards of 100 colonies each; this is all we are planning to keep here; then in Kalkaska County, where red raspberries is the source of our surplus, we have 200 colonies; these will be increased to 3 yards, and it looks now as if this Kalkaska locality will support more than 100 colonies in one yard. In this case our 6 yards may contain 700 or 800 colonies, although our number now is only about 500. With this number of colonies in two locations, where the honey source is of an entirely different nature, one feels quite sure in depending upon the bees for a living, and a little extra for a rainy day, without burdening himself with many more, as some are doing.

E. D. TOWNSEND.

Mr. Hilton—I am interested in the paper by Mr. Townsend, because he is practically a neighbor of mine, living in

an adjoining county, a man I am very well acquainted with, and a man I very much admire. He has had experience with out apiaries, and so have I, and his experience with my own experience, with which I am familiar, I can readily come to the conclusion that very much depends upon the environment of the man, as to how many out-apiaries he shall keep, or how many bees. Mr. Townsend's environment is of a character that he can give his unlimited and unstinted time, if necessary, to his apiaries and to his business of bee-keeping. Mine are of that character that I can hardly leave home for 24 hours. In fact, in the employ of the Government as I am, I am not permitted to be absent from my office to exceed 48 hours without permission from Uncle Sam.

Now the question of these out-apiaries depends upon the environment of the man, and the ability of the man as a bee-keeper. Most of those within the sound of my voice are very naturally adapted to the business, or you would not be here; and those of us that are adapted to the business of bee-keeping can take it up to a successful issue if we can apply ourselves to it. In the first 15 years of my experience as a bee-keeper I made quite a success of the production of honey in home and out apiaries. As other conditions bound me tighter to my office and home surroundings, my bee-keeping outside of my home became less remunerative, until I was actually obliged to abandon my out-apiary. The only bees that I have to-day are those in my little home-yard in connection with my home and garden, and the other things around my immediate family surroundings. So that the question to be answered, as I see it, must depend very largely upon the man and his ability to manage and his manner of management.

Now, the paper will strike some of you as very strange when Mr. Townsend says he has kept bees 50 miles from home for 2 years and has only seen them 8 times. Mr. Townsend does this, and successfully. I never did it—I never knew enough to do it—and I give Mr. Townsend credit for knowing a great deal more than I do, because he does it. Just how he does it I am not in a position to state. That he intends to do more of it there is no question of doubt.

Mr. McEvoy—Is it all extracted?

Mr. Hilton—No, sir. He produces both.

Sec. Hutchinson—That yard managed that way was all extracted.

Mr. Hilton—I think it was. Mr. Townsend says we are not obliged to change our home surroundings to keep out apiaries, provided they are of such a character that we can give the necessary attention to the out-yards when it is necessary. So that we can take into consideration one fact, that if we are the right person, and if we can adapt ourselves to the right localities and conditions, we can have about as many out apiaries as we want, provided we know how to manage them.

Dr. Miller—I don't think there are very many who follow the advice of the writer, but it is worth while for us to know what an exceptional man can do in an exceptional way, and so I value the paper.

Mr. Baxter—I take for granted this paper was intended for the specialist—the man who makes bee-keeping his sole occupation—and I don't see any reason why a person in that capacity, if he has the necessary ability, could not manage an apiary like that and make money out of it.

Mr. McEvoy—I don't think he tells you in the paper just how he manages the business to control it so.

Dr. Bohrer—I think the ground was pretty well covered by Mr. Hilton. I found I could keep as many as 100 colonies and upwards in one yard in Indiana, but my immediate neighbors did not have as many of them. There are probably not 500 colonies of bees in the county where I live now, and I might keep 1,000 or 2,000, but if each neighbor on each side of me was to start up with so many colonies, we probably would exhaust the resources. We don't know what it will be in our country. Alfalfa is becoming more abundant every year, so that it is not a settled question, and cannot be at any time, yet I am willing that all of my neighbors, if they will take good care of their bees, should keep a few colonies to get honey for their home use. If they do not intend to take care of them, and will allow foul brood to get in amongst their bees, and will keep a low grade of stock at that, I do not think they ought to be allowed to keep any. The scientific bee-keeper will always find elbow-room in such portions of the country as are adapted to the production of honey. The specialist has to look out for a

American Bee Journal

territory, and I can not tell him where to go. If he wants to come down to Rice County, Kansas, I can point him to an excellent place there where they have good climate, lots of Alfalfa, good looking women, and splendid men.

Mr. Holtermann—I am a specialist in bee-keeping, and in regard to the question of how many colonies of bees a man should keep, I agree with the idea first of all that if a man won't keep them properly he would better not keep them at all. In the next place, as to how many the specialist shall keep, I am finding a difficulty which I am unable to overcome and produce first-class honey, and that is, that at a certain stage in the honey-flow in the average locality there comes a time when we shall extract. Now if those bees are run in the best way, the honey is all ready to extract at about the same time, and the difficulty I find is to extract all at the same time. I have got up to something like 340 colonies of bees, and am wintering 339, beginning with 300. I have tried to do my work quickly, intelligently, and expeditiously, and I have at different times taken out from between 5200 and 5300 pounds of honey in a day, and yet it puzzles me to overcome that difficulty of dealing with those colonies at about the same time. I have used 6-frame extractors, and I am selling them now and taking an 8-frame; I have ordered a gasoline engine, and I am having made an uncapping machine. I am trying to increase the speed of extracting, but the greatest difficulty which confronts me is that of dealing with those colonies at that time quickly; and unless I can succeed in increasing my speed of extracting, I can't increase much beyond the 300. I have read Mr. Townsend's system and method, and I may be wrong, but I am convinced that there are very few indeed that could carry on out apiaries and keep bees in the way in which Mr. Townsend seems to be successful; and I think it would be a mistake for bee-keepers, and for the welfare of the people at large, to let the idea go out that people can conduct out apiaries and run them successfully, except under very exceptional conditions, by visits of that limited number in a year.

(Continued next week.)



Send Questions either to the office of the American Bee Journal, or to Dr. C. C. MILLER, Marengo, Ill.
Dr. Miller does not answer Questions by mail.

Making Honey-Vinegar

I see occasional mention made by you and others of making vinegar from unsalable honey. Will you kindly tell me your method of making the vinegar.

MASSACHUSETTS.

ANSWER.—If you dilute honey with water, and keep it long enough, you can hardly prevent it from becoming vinegar. You can take 2 pounds of honey for a gallon of vinegar, or you can dilute honey with water till it is only strong enough to float a fresh egg so that a patch of the shell about as big as a silver dime shall float out of the water. Then use the same means you would with cider for vinegar, letting it stand exposed to the air, keeping out the flies with mosquito-netting. Standing in the sun hastens the process. It takes a year or two for it to "make."

Growing Catnip and Sweet Clover—Salt and Sulphur for Foul Brood

1. They must be sown in the fall, and the sweet clover must be covered. It will not grow in just any old way, at least not for me. If I had known this a few years ago I could have had a good stand on several acres that I now have to plow and re-seed, for although I have 800 acres of land I do not want a poor stand of sweet clover. It is too valuable—the sweet clover I mean.

2. I had foul brood in my yard last season, and I put salt and sulphur into every hive and around every entrance, and I can not find a single cell of it now. If I do later I will report; but it may be that it was not the salt and sulphur, for I did some painting also. If it proves a cure, to which would you advise me to give the credit?

I will tell you why I do not ask as many fool questions as I used to do. It is because I read the American Bee Journal, and I also have some bee-books, one of which is called "Forty Years Among the Bees."

NEBRASKA.

ANSWERS.—1. You are quite right that there are some ways in which sweet clover may utterly fail to make a stand. You may be right that it is better sown in the fall, especially in your locality, but I doubt whether it would fail here if sown in the spring, provided conditions are all right. The one thing that causes failure is having the ground too soft, for then it heaves in winter. The most of it here grows along the roadside where the ground is very hard and the seed tramped in. Perhaps it might be all right in soft ground if covered, as you say; but it must be covered deep enough so it will not heave in winter.

You talk as if you had some acres of ground occupied with sweet clover. Please tell us more about it. What do you use it for? If for forage, do you use it green or dry? How much ground have you occupied with it?

Do you seed down good land to be occupied entirely with catnip? and is it of any use except for the bees?

2. The probability is that neither the salt nor the sulphur was a cure, nor yet the painting. It is nothing new for foul brood to seem to disappear entirely for a time when a good flow of honey comes, but in such case it is likely to reappear. If yours was genuine foul brood, and does not appear again, be sure to report.

Better to ask "fool questions" than to remain in ignorance; but you are taking the wise course to get all you can from the books; and when you've done that, there's still room for plenty of questions.

When Do Bees Swarm?—Other Swarming Questions

1. About what time do bees generally start to swarm?
2. If a queen and drone trap is put on the hive, a swarm issues, and the queen gets in the trap, but manages to find her way back, or I put her back, how soon will they try again?
3. If I put part of the bees in an empty hive without a queen, will they rear one?

MINNESOTA.

ANSWERS.—1. It depends upon locality. In Minnesota likely about the time white clover gets under good headway, and from that on. If any one can give a more definite answer, I'll gladly yield the floor. It will be about the time the first queen-cell is sealed.

2. Generally the next day; possibly not till 2 or 3 days; possibly not at all with that queen, for she may be badly treated by the bees, causing her death if she doesn't swarm to suit them (but I wouldn't like to be too positive about this), the first virgin that emerges issuing with a swarm something like 8 days after the time of the first swarming.

3. Better not try it. The bees will be likely to desert unless you imprison them for a couple of days, and if they do rear a queen she will not be likely to be of the best; and no matter how good she is, it will not be far from 8 weeks before she gets to laying, and the force will be pretty well reduced and discouraged. Give them at least a mature queen-cell.

Some Questions on Management—T-Supers

1. The past winter was rather disastrous to bees in this vicinity, and has left us with a good many empty combs; and while I have some increase to occupy them, I have some hives that I don't want their forces divided. If I retain their queens should they swarm, and let the bees return to their hives without the queens, then when I hear their young queens piping I destroy all queen-cells, will they be likely to swarm again? They are in 10-frame hives, and I have given them a 10-frame super on top. Do you think they will be likely to swarm?

2. I wish to save their old queens, and have in mind taking other hives, and by taking 1 frame with queen and putting into new hives and shaking or brushing the bees into them, and putting the hives with the brood on new stands and giving them these queens, will they accept them at once, or should I wait a day or two?

If on the 8th day after swarming a queen is hatched, and several days should ensue when it was unfit to go through and destroy queen-cells, or they to swarm, would not several queens be hatched out? Would there not be fighting to a finish? Some one has said that the worker-bees would guard the cells and not let them hatch if they contemplated swarming. Don't that sound a little "fishy"? Queens are hatched by a process of Nature. Can they retard that process?

4. I have heretofore been at a loss how to save queens for future use. To show my ignorance I will ask: How do queen-breeders manage to get their queens with accompanying bees into shipping-cages? Do they take the worker-bees in their fingers?

5. I had an extra queen about May 1 that I wished to save. So from one of my strongest colonies I took 2 frames of brood and put them on the old stand, and filled up with empty combs. I put the old hive with queen on a new stand. I supposed many bees from the old hive would return. As they did so, they fought till fully a pint of bees were killed. I supposed the queen which I put on top of the brood would be killed (she was in a shipping-cage). After they were through fighting I opened the hive and found the queen liberated and all right. Was such action to be expected under the circumstances, or was it a freak?

6. I have seen much discussion between you and others about the T-super. I have been using a T-super for years, and will not use any

American Bee Journal

other that I have ever seen. I have never seen it advertised in stock. It was originally gotten up by Elvin Armstrong, about 25 years ago, and was favorably spoken of by the American Bee Journal at the time. He was then engaged in the bee-supply business, but soon quit. I have always had to send a sample to the manufacturers to get them made. When put together to go on the hive, I could throw them over a fence and they would not come apart. I would like to have you see one. It may not suit you, but it suits me. I wish I could draft it and send you a draft or describe it, but I can do neither. I would send you a sample all ready put together with sections less the starters if you will pay the express charges. I have had to pay 50 cents expressage where I sent samples. They are put up for 8-frame hives, but I use them indiscriminately for 8 or 10 frames. IOWA.

ANSWERS.—1. As there would be only the one queen in the hive, and no possibility of rearing another, it would be suicidal for the bees to swarm. We have had accounts lately of millionaires committing suicide, but don't expect such foolish things of bees, but there have been reports of exceptional cases when the bees didn't seem to have any more sense than millionaires. For all practical purposes, however, it may be said that when a virgin is in a hive with no queen-cells, and nothing from which a queen can be reared, there will be no swarming.

2. They will accept them at once, as the queen and bees belong together and have never been apart.

3. No, I don't think there is anything "fishy" about workers standing guard over cells to prevent the free virgin from destroying them. You can satisfy yourself on that point by a little observation. When a second swarm is contemplated, if the weather delays it, the

idea of further swarming may or may not be given up. If it is given up, then the cells are no longer guarded, the virgins that have been quabking in the cells are allowed to emerge, there is a fight to a finish, and all immature queens are destroyed in their cells.

4. You have lots of company in your ignorance. Yes, you cage the workers with your bare fingers, pushing them into the cage through the little round hole. Take the cage in the left hand, find a bee with its head stuck in a cell helping itself to honey—partly because it's easy to get such a bee, but also because such a bee is generally of the best age to stand confinement—grasp it by both wings, push its head into the hole, and it will generally run into the cage without any ceremony. Some, however, put it in tall foremost, pushing upon its head to make it go in. Then the forefinger of the left hand keeps the hole closed till another bee is caught.

5. I'm not sure that I've seen it ever mentioned in print, but I think such a proceeding as you mention is the rule rather than the exception; only I think it is unusual for so many bees to be killed. I have not paid much attention to it of late years, but years ago, when I gave a queen somewhat in the way you describe, I was surprised to find a good many times a number of dead bees carried out of the hive. My final surmise was that there were two factions, one for the queen, and one against her. I'm sure about the fact of the bees being killed, but I may be wrong in my surmise.

6. I think I have among my accumulation of all sorts of things a super such as you describe. I have never yet seen any variation that seemed to me as good as the simple super with loose T tins. If I should begin paying carriage on samples of things that are offered me, I'm afraid it would "break" me.

Reports and Experiences

A Heavy Honey-Flow

Bees are doing fine. We are having a heavy honey-flow.

The American Bee Journal gets better every week. T. L. SHAWLER.

Silver City, Iowa, June 7.

Working on White Clover

White clover is in full bloom at present, and bees are doing good work on it.

Nisbet, Pa., June 14. GRANT STANLEY.

Season Disastrous to Honey-Flow

The season here is disastrous to the honey-flow. The dry weather early in the spring retarded the clover growth until we have but very little, and it is so cold now that the bees can work but little. GEORGE M. RUMLER.

Mohawk, Ind., June 13.

Should Have a Full Honey-Flow

My bees wintered in the cellar. I did not lose a single colony. All have queens and are populous. White clover is coming on fine. Soon sweet clover will be in full bloom. What few basswood trees we have here are showing up first-class. We ought to have a full honey-flow. W. A. WISEMAN, M. D.

Camargo, Ill., June 7.

Killed by the Frost—Peach-Bloom for Bees

The late freeze killed at least 75 percent of the strawberry crop. About 95 percent of the peaches are killed. All of my 100 Japan plum-trees were white with bloom, and it "fixed" nearly every one of them. About 100 pear-trees were in bloom, and it killed nearly all the Duchess and the delicious Tyson, but I'll probably get 20 percent of a crop of Kleffer, Garber and Wilder Early. I had 40 apricot-trees with apricots already formed, and it "fixed" all but a few in the very top of the trees.

I have been waiting several years for a peach crop, and only for the frost the prospect was good for 500 bushels or more. I

don't expect now more than 20 or 25 bushels—probably not that much, and I may get 50 bushels of Keiffer pears, and 2 or 3 pockets full of apricots. However, crying over spilt milk will not feed the hungry, and I still have much to be thankful for. There are none of us sick. We are all enjoying life as usual. We have 7 cows, lots of milk, butter, and several yearlings and little calves; some hogs, a lot of full-blood, fine strain of Bradley Barred Rock chickens, about 150 little chickens, a lot of hens sitting, and then there are the bees. True, my wife thinks I am feeding them more than they are worth, but as raspberry is almost ready to bloom, I think I won't have to feed any more, except 3 or 4 weak colonies.

I never saw bees in such need as they have been this spring. I have had to feed nearly every colony to keep them from starving and to keep up brood-rearing, but some will be ready for supers in a few days if the weather is favorable, as we have lots of both wild and tame raspberries here. There are lots of wild crab-apples in the woods near here, which are now in full bloom, and the dandelions are abundant in the pastures and are now in bloom. The wind has been blowing so hard during a good part of May so far, that the bees could not work well even on warm days. For 2 days the peach-blossoms gave a flow of honey almost like basswood. I'll agree with Mr. Hasty on peach-blossoms. Peach and pear bloomed together, but the bees sung a much louder song in the peach-trees than in the pear-trees. And the Japan plums that were also in bloom, got but very little attention from the bees during those 2 good days of peach-bloom. The cherries were also in bloom, but showed very few bees. The peach-trees were just humming with them.

J. E. JOHNSON.

Williamsfield, Ill., May 14.

An Experience With Bees

First, I am a locomotive engineer. So you see a farmer is not the only person who can keep bees and produce honey. I started in the spring of 1903 with 1 colony in a Root double-story chaff hive, and 1 in a store-goods box. These gave me 4 good colonies and 140 pounds of honey that season. But, of course, the honey was not all in as good shape as A No. 1 should be, but it was all stored from flowers, and no sugar syrup. These 4 colonies I wintered, and the next season increased to 7, and produced 285 pounds of A No. 1 honey and 100 pounds of unfinished sections, and all, or nearly all, had enough in to use. All the money I ever invested for supplies was \$10. I bought 3 queens, and killed others to make places for them. I could have had several more colonies of bees last summer, but did not want them. I make all my own hives,

8 and 10 frame Langstroth. The first year I had lots of bees hanging on the front of the hive, but last summer I never had a pint of bees hang out. I have my super arrangements fixed so that I can give them lots of ventilation by simply raising the cover a little. I expect to make my bees give me 100 pounds of honey (I speak of section-comb honey) next summer.

I live in a town, with neighbors on all sides not 200 feet away. I take the American Bee Journal, and have "A B C of Bee-Culture" and "Langstroth on the Honey-Bee."

Now for a little of the other side: I had a colony that swarmed July 6. I hived the bees on the old stand, and set the mother colony about 20 feet away. They did not have any queen-cells, but lots of brood and eggs. In about a week I looked and still no queen-cells and no eggs. So I sent to a breeder for a queen, and July 17 I introduced her in the cage she came in, with the candy method, and she was killed Aug. 12. Still no eggs and no brood. I introduced another queen, leaving the cage lie on top of the frames 24 hours before I gave the bees access to the candy. August 18 she was not yet out of the cage. I released her and all seemed to be all right, but on Aug. 21 I could find no queen nor eggs. Then on Aug. 22 I united them with a nucleus having a laying queen. This I did in the following manner:

I closed the rebels and set them on top of the nucleus with wire-cloth between for 24 hours. Then I made a small hole in the wire and let them work down and out through the nucleus. They killed the queen and almost all of the bees of the nucleus, and started cells on larvae of the nucleus. September 9 a friend gave me a good, strong nucleus with a good queen. So I shut the rebels up and set them away for 3 days and put the nucleus on the stand. Then I took the rebels and shook all the bees off their combs on the grass and let them run into the nucleus. They fought some, but on Sept. 12 I examined them and found the queen in the hive, also 3 queen-cells, but no eggs, as this queen had stopped laying. I pinched the cells out and thought all would be well, but Sept. 16 I looked again and the queen was gone, and 5 more cells started. I pinched them out and tried to introduce another queen, but they killed her. All this time there was not an egg laid in this rebel colony; so don't say laying worker. I left them until Oct. 30, and still there were about 2 quarts of bees left. These bees carried pollen and honey nearly all the time, but not a single egg or brood of any kind, so I introduced a dose that they all took—about 1 tablespoonful of sulphur.

Now, will some one explain what was wrong? I would like to see an answer in the American Bee Journal. LEWIS.

Jersey Shore, Pa.

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The fly ball type of governor is used, which automatically controls the exhaust, igniter and the gasoline; it also allows the speed to be changed from 100 to 600 revolutions per minute while the engine is in motion—a very superior feature.

LION GAS OR GASOLINE ENGINES
are simple in construction and
EASY TO OPERATE

They are used for all purposes where power is required for operating private electric-lighting plants, small factories, printing offices; farm machinery, such as cream separators, feed-grinders, corn shellers, wood-sawing machines, etc., and for a thousand and one other purposes.

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LYONS ENGINE CO.,
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Gentlemen: I am about to purchase a gas or gasoline engine for _____ purposes and wish you to send me full particulars about your approval offer as advertised in American Bee Journal.

Yours very truly,

Name _____

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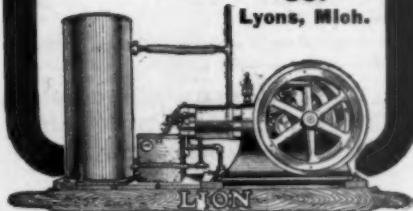
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When writing, please state definitely for what purpose you wish to use this engine and whether gas or gasoline is to be used for fuel. This information is very important to us. Please remember we send the engine, not the engine agent.

LYONS ENGINE CO.

Lyons, Mich.



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We carry a complete stock of "Mandy Lee" Incubators and Brooders. Don't fail to investigate these machines. The more you know about incubation, the more you will like the "Mandy Lee" Incubator. The "Mandy Lee Brooder" is a complete old hen, all but the "cluck." Our free incubator catalog describes them.

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Full Line of Lewis
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Good Second-Hand Cans, 2 in a box, 40 cents a box in lots of 10 boxes.

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We manufacture everything needed in the Apiary, and carry a large stock and greatest variety. We assure you the best goods at

LOWEST PRICES

and our excellent freight facilities enable us to make prompt shipments over 15 different roads, thereby saving you excessive freight charges as well as time and worry in having goods transferred and damaged. We make the

Alternating, Massie, Langstroth and the Dovetail Hives

Our prices are very reasonable, and to convince you of such we will mail you our free illustrated and descriptive catalog and price-list upon request. We want every bee-keeper to have our Catalog. **SPECIAL DISCOUNTS** now. Write to-day.

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My Catalog for 1906 is now ready for distribution. I am the Northern Headquarters for **Adel Queens and Bees**, and good, honest Bee-Keepers' Supplies. If you have not received my Catalog, write for it. Address,

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Most bee-keepers have been convinced that when time and material are figured, it pays to buy hives, and the best is not only as cheap, but—

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The Elgin Hive excels in many ways—no nails to drive—no dovetails—can be taken apart at any time.

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We sell full line of SUPPLIES.

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45A1f J.G. Goodner, of this State, writes me that he "prefers to pay \$25.00 for a Rietsche Press rather than do without it."—A. G.

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Is made of the best grade of White Pine, accurately cut, so it will go together without the use of tools, except a hammer.

Such is the kind of Hives we make, and such is the kind you get when you buy from us.

"It is a cinch" that we make lower prices than you can get from any dealer, as you save the middleman's profit when you buy direct from the manufacturer.

We are Manufacturers, and sell direct to the consumer.

Send us a list of your wants, and let us make you prices.

We guarantee everything we sell to be satisfactory, or refund the money.

We have large stocks of Dovetailed Hives, Sections, Shipping-Cases, Foundation, Vells, Smokers, etc., on hand, and can ship promptly.

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A. COPPIN, Wenona, Ill.

BEE-SUPPLIES

Sections, Comb Foundation, Smokers, etc. Best of goods, reasonable prices, and a "square deal." If you need any Queens, let me tell you what I have to offer in this line. Circulars free.

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Wanted

To sell lot of 300 empty 60-lb. capacity Honey-Cans. All in one lot, or less quantities. Cans are in first-class condition.

We are also in the market for Fancy Comb and Extracted Honey. Correspondence solicited

Michigan White Clover Honey Co.

AGENCIES: DETROIT, MICH.

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Original
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4 Largest Sizes Soot Burning

Never Go Out
And last from 5 to 21 years

OTISVILLE, Pa., Jan. 18, 1904.

Dear Sir:—I have tried almost everything in the smoker line; 3 in the last 3 years. In short if I want any more smokers your new style is good enough for me. I thank the editor of Review for what he said of it. Those remarks induced me to get mine. FRED FODNER.

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Thin 4-lb. Smoker Engine 8 1/2-inch 2 1/2-inch 2 1/2-inch Wonder
\$1.50, \$1.00, \$1.00, 90c. 65c—per mail.
Sent on receipt of price per mail.
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Sample copy free.

Our large, illustrated Price-List of Supplies free on application. Address,

The W. T. Falconer Mfg. Co.
JAMESTOWN, N. Y.

Honey and Beeswax

CHICAGO, June 5.—The honey market is in about the same condition as when we quoted last. Very little call for either comb or extracted. No. 1 white comb, 15c; other grades, 10@14c. Extracted, white, 6½@7c; amber, 5@6c. Beeswax, 30c.

R. A. BURNETT & CO.

TOLEDO, Feb. 19.—The market for comb honey has been better for the past two weeks than at any time during the past season. Prices are firm on account of the scarcity. We are getting 15@16c for fancy white clover; 14@15c for No. 1, and 13@14c for amber. Buckwheat, 13c. Extracted honey is in good demand at following prices: White clover in barrels brings 6½@7c; amber, 5½@5¾c; in cans every grade from 1@1½c higher. Beeswax is firm and in good demand at 28 and 30c.

The above are our selling prices, not what we pay.

GRIGGS BROS.

INDIANAPOLIS, May 12.—Fancy white clover comb brings 16c; No. 1, 14c; demand exceeds the supply; fancy white western comb brings 14@15c; amber grades in poor demand at 12c. Best grade of extracted honey brings 8½@9c in 60-pound cans; amber, 6c. Good average beeswax sells here for \$33 per 100 pounds.

WALTER S. POWDER.

PHILADELPHIA, June 11.—There is no new honey arriving in this market as yet, and so few lots of old honey sold that we cannot establish any price. Some little lots of Southern extracted honey have arrived in barrels. We quote: New Southern honey, light amber, 6½c; amber, 6c. Beeswax selling freely, 29c.

We are producers of honey and do not handle on commission.

WM. A. SELSER.

NEW YORK, May 8.—There is still some demand for comb honey, mostly for fancy grades, which are selling at from 14@15c per pound; off grades in no demand and prices are irregular, ranging from 8@12c, according to quality; sufficient supply to meet demand. Extracted is in fair demand, mostly from California, of which there seems to be abundant supply of all grades. We quote: White, 6½@7c; light amber, 6c; dark, 5@5½c, according to quality and quantity. Beeswax scarce and firm at 29@30c.

HILDEBRATH & SGOELKEN.

Headquarters for Bee-Supplies

Complete Stock for 1906 now on hand.

FREIGHT-RATES FROM CINCINNATI

are the **LOWEST, ESPECIALLY**
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Prompt Service is what I practice.

You will

Satisfaction Guaranteed.

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Order for

QUEENS bred in separate apiaries,
the **GOLDEN YELLOWS, CARNIOLANS, RED CLOVERS** and **CAUCASIANS**.

For prices, refer to my catalog, page 29.

C. H. W. WEBER CINCINNATI
... OHIO ...

Office and Salesrooms, 2146-48 Central Ave. Warehouses, Freeman and Central Aves.

CINCINNATI, June 15.—The demand for extracted honey has brightened up within the past 30 days. However, there is so much of last season's crop still unsold, which tends to hold down the price. There is no material change in prices since our last quotation. We quote amber in barrels at 5@6½c. No new white clover extracted honey on the market as yet. New crop of comb honey finds ready sale at 14@15½c. Choice yellow beeswax, 30c, delivered here.

THE FRED W. MUTH CO.

DENVER, Feb. 5.—Owing to the mild weather the demand for honey has not been as good as usual at this time of year. We are quoting strictly No. 1 white alfalfa comb honey at \$3.35 to \$3.75 per case of 24 sections; off grade and light amber at \$3 to \$3.30. White extracted alfalfa in 60-pound cans, 7½@8½c; light amber, 6½@7½c. Beeswax, 24c for clean yellow.

THE COLO. HONEY-PRODUCERS' ASSN.

KANSAS CITY, May 31.—The honey market here is bare, no new honey in market yet. The market is about \$3.25 per case on fancy white. Extracted, 5½@6c. On account of the warm weather and heavy receipts of fruits, the inquiry for honey is dropping off, but we believe with the advent of new honey there will be a good demand for same. C. C. CLEMONS & CO.

CINCINNATI, March 7.—The demand for comb honey is slow, prices obtained are the same. Stock on hand seems to be sufficient to supply the wants. Quote fancy white, 14@16c. Amber extracted in barrels, 5½@5¾c; in cans, ¼c more; fancy white clover in 60-lb. cans, 7½@8½c; Southern, equal to white clover in color, from 6½@7c. Bright yellow beeswax, 30c.

C. H. W. WEBER.

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Write for prices. State quantity and kind wanted. Samples free.

BEESWAX—Will pay Spot Cash and full market value all the year. Write us when you have any to dispose of.

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WE SELL ROOT'S GOODS IN MICHIGAN
Let us quote you prices on Sections, Hives, Foundation, etc., as we can save you time and freight. Beeswax Wanted for Cash.

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BELL BRANCH, WAYNE CO., MICH

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BUCKEYE STRAIN RED CLOVER,
GOLDEN ITALIANS. CARNIOLANS

By Return Mail. Safe Arrival Guaranteed.

PRICES			
	ONE	SIX	TWELVE
Untested	\$0.75	\$4.00	\$7.50
Select Untested	1.00	5.00	9.00
Tested	1.50	8.00	15.00
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No. 51 WALNUT ST.,

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LEWIS SECTIONS

To the reasoning bee-keeper and dealer

Lewis Sections are recognized as the best the world over. Thousands of bee-keepers who annually order bee-supplies from different firms, insist on Lewis Sections, when it comes to sections.

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Because the G. B. Lewis Co. has been making good sections for over 30 years. The skilled Lewis mechanics have made a life study of sections and section machinery.

Because Lewis Sections are made from the finest Wisconsin white Basswood, selected by experts and run through machinery adjusted to the precision of a hair's breadth. This makes them perfect.

Read what they say about them:

Received my sections in fine shape, and am well pleased with them. They are the best sections I ever put together.

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I want to say that I consider your make of sections the nearest perfect I have ever had. I have folded packages of 500 without breaking one, and I can not say that of others I have used.

GEORGE BROWN, Deerfield, Iowa.

During the last 4 years I have bought 10,000 sections from 3 other firms. Before I had used yours for several years, but have decided after a thorough trial that yours are the best and most perfect sections in every way that I have ever used.

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I used your supplies exclusively for almost 14 years, especially the sections, and I don't want any other kind.

C. H. HARLAN, Mora, Minn.

I have received those sections in good shape, and I am well pleased with same. They are all right in every way. I shall recommend your bee-supplies to other bee-keepers. I think you make better goods than any other firm in the world. Accept my thanks.

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Lewis Sections for sale by the following Agents:

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